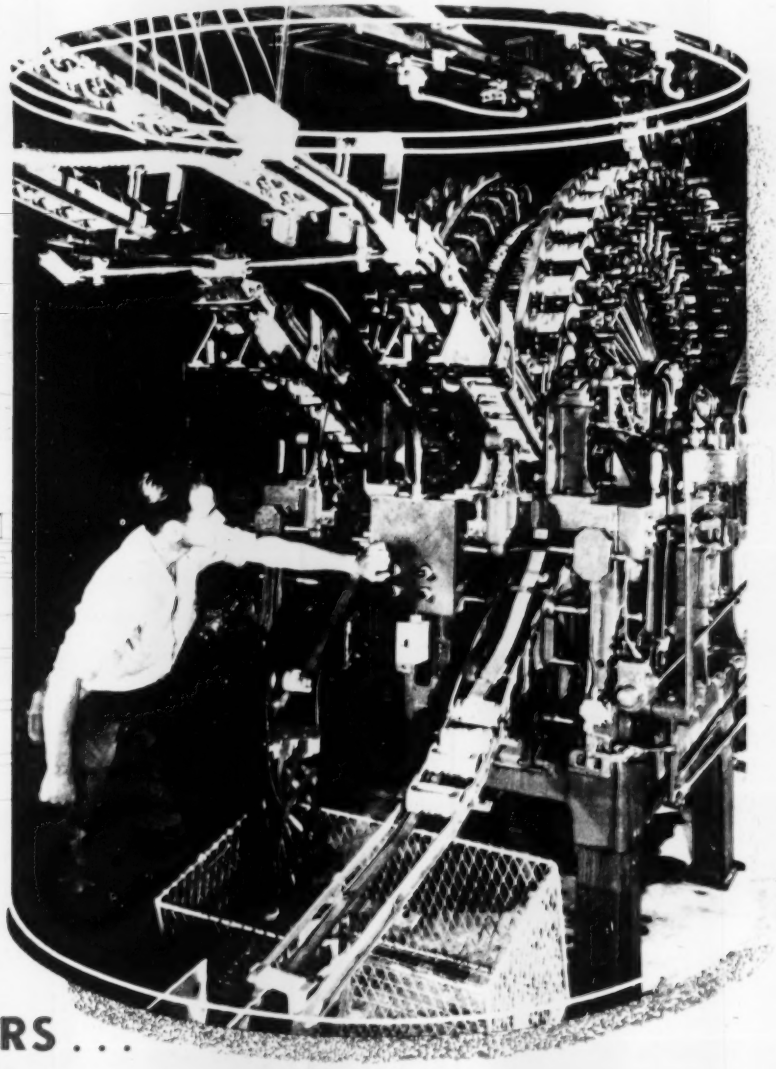
JANUARY 26, 1953

STEEL

THE WEEKLY MAGAZINE OF METALWORKING



CONTAINERS . . .

fourth largest consumer
of steel in the U.S.—page 48

✔ **PRICE-CUTTING IN 1953?**
Not Much, Say Executives, p. 37

✔ **SLICE MACHINE DOWN TIME**
Good Scheduling Does It, p. 66

CONTENTS — PAGE 5

OVERHOISTING FEAR

This Limit Stop not only *disconnects* the motor from the line, but *stops* the motor quickly. On D-c cranes, where high hoisting speeds prevail, dynamic braking aids in bringing the hook block to rest.

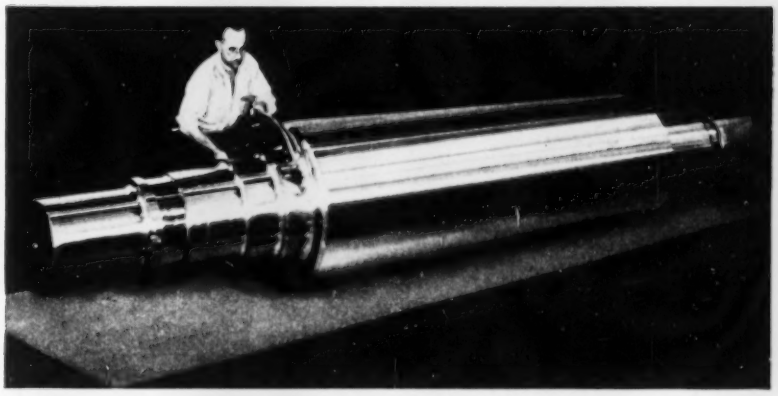
Since this Limit Stop is operated directly by the hook block, stretching of the hoisting cables does not affect the tripping point. By removing the fear of an overhoisting accident, the YOUNGSTOWN Limit Stop enables the crane operator to do better work.

*A crane *without* a Youngstown is as risky as a boiler *without* a safety valve.

Easily applied to both new and existing A-c and D-c Cranes.

WRITE FOR BULLETIN 1032

E&M



YES Almost Every Kind of Forging

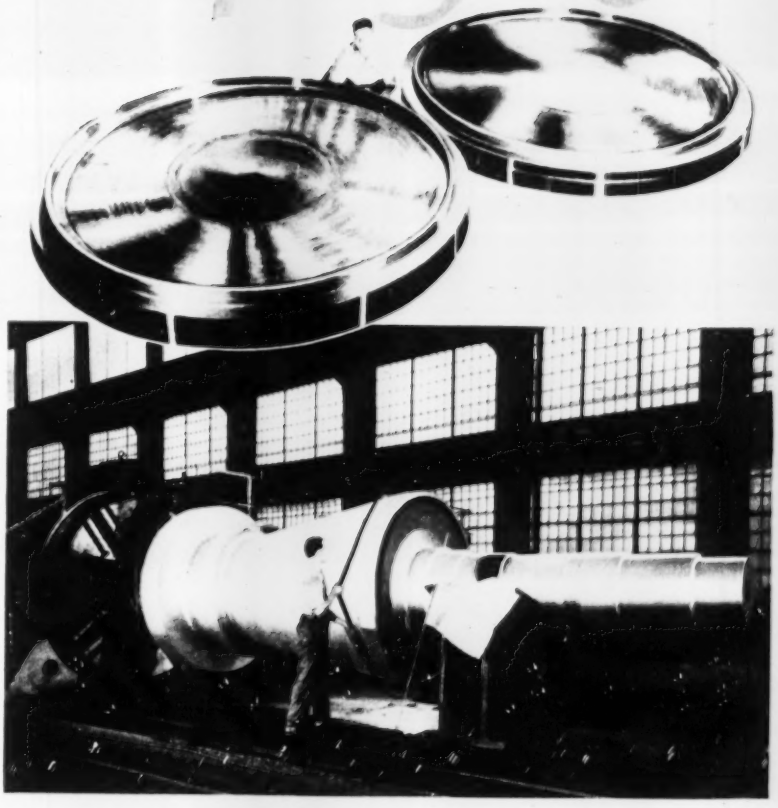
Not so long ago a visitor spent several hours in one of our plants, and when he had finished he asked, "Is there any kind of forging that Bethlehem *doesn't* make?"

Well, yes, perhaps there are a few. But by and large, we just about cover the field.

You see, we're equipped to make huge press forgings, almost everything in the medium-sized bracket, hammer and drop forgings, and many types of specialties. There isn't room here to list the scores of uses to which these forgings are put. But take our word, the list would be very long indeed.

And here's something else: our machine-shop facilities match the forging equipment in every way. Look at the picture of that hardened steel roll —a piece weighing 21 tons. It was finish-machined in our Bethlehem shops. That kind of work requires expert machinists and first-class equipment. Both of these assets we have.

Bethlehem would like very much to do business with you. Call us the next time you're in the market for large, medium, or small forgings; we'll be glad to co-operate in every way.



BETHLEHEM STEEL

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. *Export Distributor:* Bethlehem Steel Export Corporation

He's "squaring off" to square away your spring needs!

This workman is "squaring off" spring ends on a huge grinding machine. This is one of the many precision operations that make Barium's Cuyahoga Spring Company an outstanding quality *specialist* in coiled wire springs and made-to-order wire specialties, including moulding clips . . . stamped clips that need no bolts, screws or nuts.

Not only will you benefit by Cuyahoga's specialization in springs, you'll also benefit because Cuyahoga is part of Barium Steel Corporation. For Barium is a single source for your steel needs, controlling quality from blast furnace to end product . . . a team of companies providing industry with steel in many forms. No matter which Barium company handles your order, the finest engineering research and product development is available to you from Barium's *staff* engineering force.

Address your steel needs to Barium Steel Corp., 25 Broad St., New York City.

Barium

A coordinated effort of 16 companies working in steel

MILL PRODUCTS • SHAPES TO ORDER • END PRODUCTS

BOLTS	STEEL PLATE	PIG IRON	CRANES AND HOISTS	SPRINGS	BOLTS AND NUTS	METAL STAMPINGS
Bayonne Bolt Corporation	Central Iron and Steel Company	Chester Blast Furnace	Clyde Iron Works, Inc.	Cuyahoga Spring Company	Erie Bolt and Nut Company	Geometric Stamping Company

DROP FORGINGS	HEAVY FLAT DIE FORGINGS	AIRCRAFT ENGINES AND PRECISION ASSEMBLIES	MARINE DIESEL AND GASOLINE ENGINES	STRUCTURAL SHAPES AND STEEL FABRICATIONS	BARGES AND TUGS	FABRICATIONS OF ALUMINUM, MAGNESIUM, FIBERGLAS, PLASTICS,
Globe Forge, Inc.	Industrial Forge and Steel, Inc.	Jacobs Aircraft Engine Company	Kermath Manufacturing Company Kermath Limited (Canada)	Phoenix Bridge Company Phoenix Iron and Steel Company	Wiley Manufacturing Company	East Coast Aeronautics, Inc.

ATLAS DC
Round-Braided
8-part Body
Sling.

Sling life goes up with "balanced braiding"

Macwhyte's Atlas Braided Slings

There's longer life in an Atlas Braided Sling because of Macwhyte's *balanced* method of construction: 1. Ropes are spliced endless before braiding. 2. Right lay ropes balance left lay ropes. 3. All ropes follow uniform spiral paths, assuring balanced tension throughout the sling body.

Greater flexibility, no kinking, no spinning, and longer sling life are all provided by Macwhyte's "Balanced Braid."

Two Macwhyte Atlas type 8 CT Round Braided Slings with C-iron lifting beam handling plate stock.

Complete line of slings to fit every need

Three types of body are available: Atlas Round-Braided, Drew Flat-Braided, Monarch Single-Part. All are made to order in any size for any job.

Our engineers will gladly study your sling needs and make recommendations.

MACWHYTE SLINGS

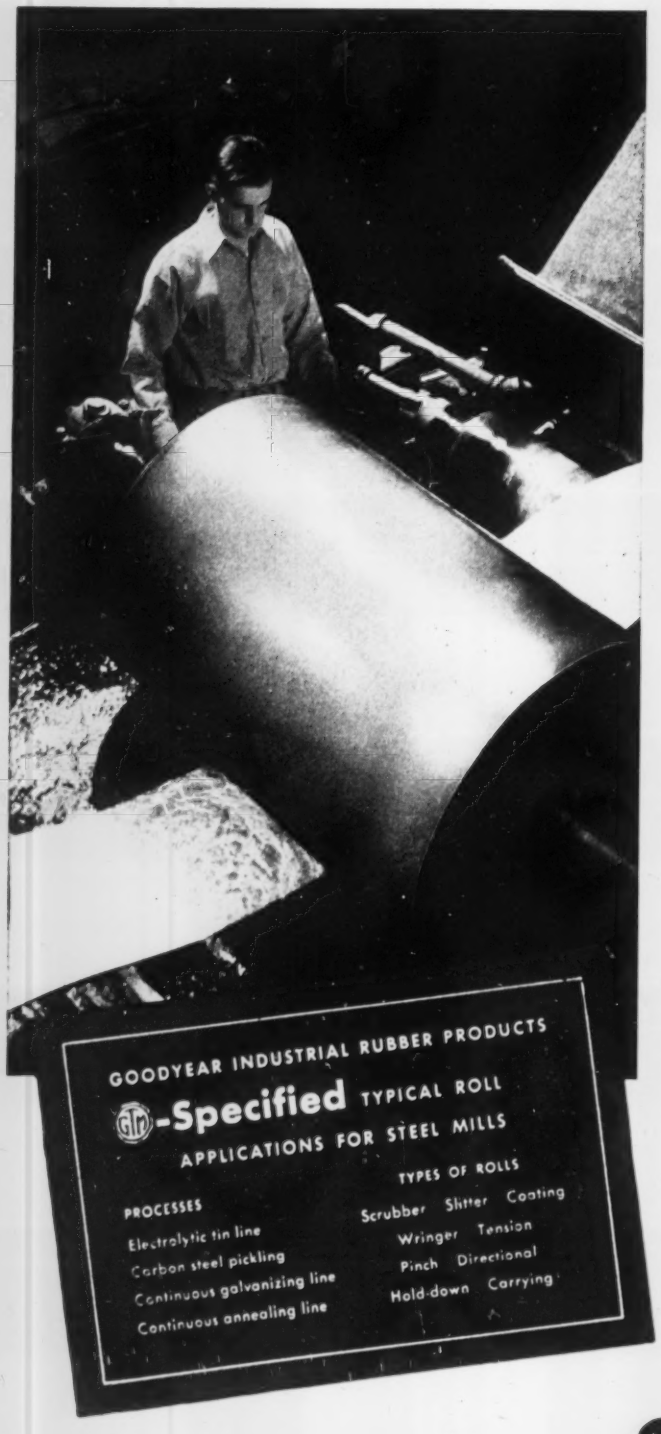
MACWHYTE COMPANY
KENOSHA, WIS.

See the hundreds of slings in new Macwhyte Sling Catalog S-8

MACWHYTE COMPANY
Kenosha, Wisconsin

Manufacturers of Internally Lubricated PREformed Wire Rope, Braided Wire Rope Slings, Aircraft Cable, Safe-Lock Assemblies, Monel Metal and Stainless Steel Wire Rope.

Mill depots: New York • Pittsburgh • Chicago • St. Paul Fort Worth • Portland • Seattle • San Francisco • Los Angeles • Distributors throughout U.S.A.



They rolled away their troubles on this strip pickling line

ON this continuous steel cleaning line—combining shot blast cleaning and pickling—stainless steel strip is passed along over and under rubber covered rolls specified by the G.T.M.—Goodyear Technical Man.

During processing, the steel strip undergoes shot blasting, as well as pickling in 16% sulphuric acid at 185°-190° and 12% nitric-hydrofluoric acid at 150°. The rubber hold-down and carrying rolls rotate in these acid solutions.

Special rubber compounds, specified by the G.T.M., are built into the roll covering to resist this heat and acid action. Result is longer life and more trouble-free service.

Goodyear's rubber rolls resist heat, chemicals, oil, abrasion, or other roll-killing conditions. Each covering is tailor-made to make the roll function as designed. "Superbonding" process permanently bonds rubber covering to the metal core.

Why not discuss *your* roll requirements with the G.T.M. now? You can reach him by writing Goodyear, Mechanical Goods Division, Akron 16, Ohio.

LOOK FOR YOUR GOODYEAR INDUSTRIAL RUBBER PRODUCTS DISTRIBUTOR *in the Yellow Pages of Your Telephone Directory under "Rubber Products" or "Rubber Goods." He handles Hose, Flat Belts, V-Belts, Molded Goods, Packing, Tank Lining, Rubber-Covered Rolls built to the world's highest standard of quality.*

GOODYEAR

THE GREATEST NAME IN RUBBER

We think you'll like "THE GREATEST STORY EVER TOLD"—Every Sunday—ABC Network

This Week in Metalworking

STEEL

Vol. 132 No. 4 Jan. 26, 1953

✓NEWS ✓PRODUCTION-ENGINEERING ✓MARKETS

✓ Metalworking Outlook 29

As the Editor Views the News 33

Windows of Washington 44
Washington Editor E. C. Kreutzberg reports as national interest centers on the capital city

Mirrors of Motordom 51

The Business Trend 55
Follow the course of business activity in charts and on the industrial production index

Men of Industry 59

✓ Production-Engineering News at a Glance 65

Schedule a Slice Out of Downtime 66
Organizing the flow of jobs and selection of tools can save valuable machine time and operator's man-hours

Air Keeps Small Plant in the Running 68
Pneumatic vises, chucks and ejectors help small plant get volume production. Keeps costs down, too

Distortion: It Can Be Minimized in Heat Treating 70
Even with improved steel and furnaces, it's still a problem facing tool and die makers. These tips will help

Floating Foundations Cut Hammer Damage 73
Springs take the bumps out of this punch operation and building, operator and machine enjoy less fatigue

Progress in Steelmaking 88
Better Lubrication Boosts Production—Lithium base grease licks water hazards in this hot strip mill

New Products and Equipment 97

✓ The Market Outlook 107
Metal Prices and Composites appear on Page 108

The Metal Market 119

Behind the Scenes	6	Obituaries	62
Letters to the Editors	10	Calendar of Meetings	92
Subcontract Summary	42	Helpful Literature	103
Checklist on Controls	43	Metalworking Briefs	129

Editorial, Business Staffs—16. Advertising Index—136. Editorial Index available semiannually. STEEL also is indexed by Engineering Index Inc., 29 West 39th St., New York 18

Published every Monday by the Penton Publishing Company, Penton Building, Cleveland 13, Ohio. Subscription in the United States and possessions, Canada, Mexico, Cuba, Central and South America, one year $10; two years $15; all other countries, one year $20. Single copies (current issues) 50 cents. Metalworking Yearbook issue $2.00. Entered as second class matter at the postoffice in Cleveland, under the Act of March 3, 1879. Copyright 1953 by Penton Publishing Co.

WHAT'S THE BEST WAY TO STRIP PAINT FROM METAL PARTS TOO LARGE TO BE SOAKED IN TANKS?
See Page 3

Oakite's New FREE Booklet on Paint Stripping

answers many questions that will lead you to better stripping procedures. You'll want to read more about:

What's the best way to strip large areas of structural metal where a steam supply is available? *See page 5.*

What is the best method when steam is not available? *See page 7.*

What is the cheapest way to strip metal parts in large volume? *See page 9.*

What are the best ways to prepare stripped surfaces for repainting? *See page 11.*

What strippers are best for removing oil-base paints? . . . Synthetic enamels, alkali-resistant plastics or resin-based paints? . . . Japans, wrinkle finishes, nitrocellulose lacquers, alkyds, phenolics and ureas? *See page 12.*

FREE For a copy of "How to STRIP PAINT" write to Oakite Products, Inc., 34E Rector St., New York 6, N. Y.

SPECIALIZED INDUSTRIAL CLEANING
OAKITE
MATERIALS • METHODS • SERVICE
Technical Service Representatives Located in Principal Cities of United States and Canada

THREADED SPECIALTIES

EYE BOLTS

by an exclusive method

Among Pawtucket's many specialty products, these lower-cost eye bolts or "swing" bolts are the leaders in this field. Pawtucket's exclusive production method keeps cost low, dimensional accuracy unusually high and strength above standard.

Pawtucket eye bolts are made in standard sizes ¼" and larger, or to your specifications. In any size, you can depend on a uniform Class 3 fit.

BETTER BOLTS SINCE 1882

PAWTUCKET

"THE BOLT MAN"

MANUFACTURING COMPANY

327 Pine Street · Pawtucket, R. I.

THE PLACE TO SOLVE YOUR BOLT PROBLEMS

T.M. REG.

Behind the Scenes...

Oil Shortage

There have been some very interesting things going on around this office in the last few weeks, and the result is that we're just about out of midnight oil. It seems that the editors depleted the supply during November and December as they put in hour after hour on the Metalworking Yearbook issue. Then the first three floors of the Penton building were brightly lighted every night the last two weeks in December as the presses pounded out the 17,280,000 pages that were printed for that issue. By then we'd put in a rush order for a couple more barrels of #1 midnight oil and they arrived just in the nick of time. Because now the circulation department has turned into a bunch of night owls, and the south wing of the 8th floor looks like Broadway every night. And the reason is very gratifying to all concerned. The number of new subscriptions that have flooded in over the turn of the year has broken all records, so if you are one of the hundreds of new subscribers and there has been any delay in getting your copies, please be patient. Fay Curtis and Alice Dailey, guardian angels who hover over and protect your subscription stencil as it is punched and tabbed and printed and filed, are able to see over the top of their desks now, and we've also run in some temporary help to relieve the log jam.

Frying Pan To Fire

But it may also just be the calm before the storm. With the announcement last week that every subscription to STEEL is entitled to one copy of the new Specifications Handbook, the mailman is starting to groan with anguish from the weight of his bag the last few mornings, as he carts in new subscription orders by the hundreds. Hold your hats, Fay and Alice, here we go again!

Help! Help!

Incidentally, this rush of new subscriptions has made it very embarrassing for circulation manager Rand Ebersole. Every year he has to get out his crystal ball and come up with a good guess on how many Metalworking Yearbook issues should be printed. Everyone agreed he had made a very fine guess but that was before folks around the industry saw copies and decided they just had to have one. The result is we're completely out, but we could use quite a few to fill orders that we're holding in our little fat hands. Here's a proposition that we've been authorized to make to you by brother Ebersole. If you are through with your copy of the January 5 Metalworking Yearbook issue and it is in relatively good shape we'll buy it back from you for $2.00 and pay the return postage. Just ship it back to good ol' Shrdlu and we'll get a check off to you pronto.

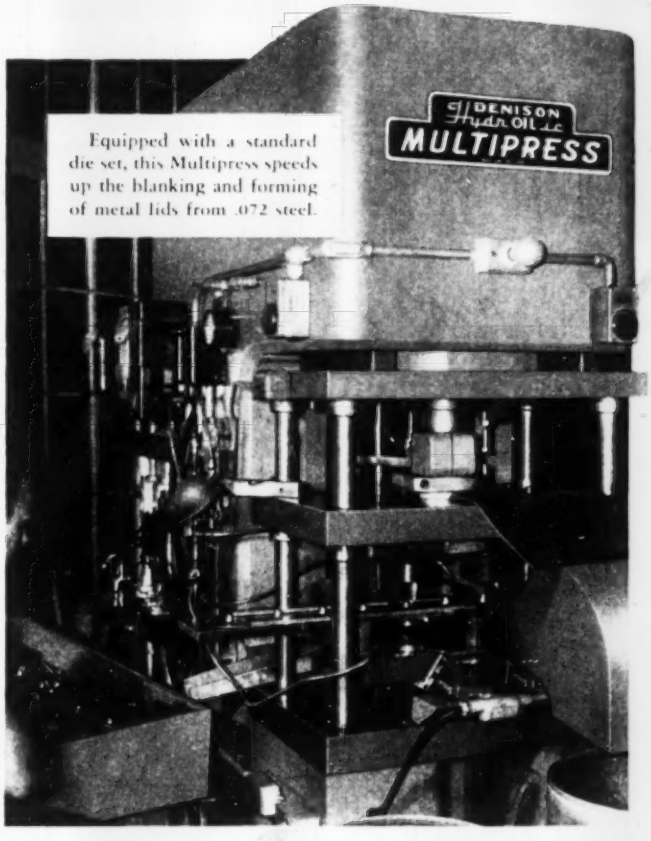
Service With a Smile

If you happened to see the Paxson Machine Co. ad a couple of weeks ago, you were probably intrigued as we were with the little footnote down at the bottom of the page, asking "Do You Fly?" It went on to say that they maintain a 2800 ft. runway and clubhouse two miles west of Salem for the convenience of all and sundry and that they will meet your plane if you just let them know you're coming. Our curiosity couldn't stand it, so we called H. D. Paxson, president of the company, to see how this really worked out. "Very well," says Mr. Paxson, "we'll average three or four planes a week landing out there to see us, and then we're happy to let Deming, Mullins, National Sanitary, Electric Furnace or others in the Manufacturers Association use it too." We were talking about this with Harold Rowland, who helps encourage Mr. Paxson to tell you good people about his strip mill equipment through the advertising pages of STEEL, and he swears he's going to try it out on his next visit down there if, in the meantime he can find a plane and if, in the meantime he learns how to fly!

Shrdlu

(Metalworking Outlook—Page 29)

"Blanking and Forming with MULTIPRESS"®



Equipped with a standard die set, this Multipress speeds up the blanking and forming of metal lids from .072 steel.

Multipress offers *lower* impact on dies . . . *lower* ram velocities.

Exact control of press tonnage cuts die wear, permits more grinds per die.

Infinitely adjustable ram stroke, plus easy inching action permits quicker die changes.

Fully adjustable tonnage, ram speed, and stroke length adaptable to a wider range of work.

Multipress offers one-ton to 50-ton capacities . . . eight frame sizes . . . bench and floor models . . . maximum accessibility for special tooling and auxiliary equipment.

Standard Multipress accessories available for many specialized production needs.

Write today for full information on Multipress.

See it in Action

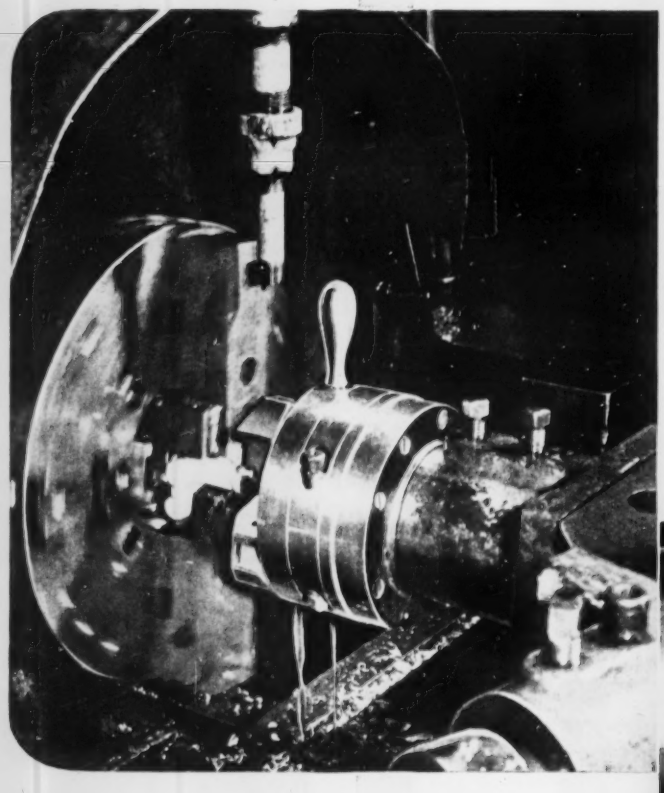
Denison's newest film, "Blanking & Forming with Multipress" brings you 10 minutes of fast action on several actual production jobs . . . shows the *how* and *why* of methods and principles . . . highlights important press control features — *and gives you a close look at the fastest hydraulic press operation you've ever seen.* Your Denison Multipress representative can show you this new 16mm sound film now, or you may write direct to —

The DENISON Engineering Company
1163 Dublin Rd., Columbus 16, Ohio

DENISON HydrOILics

GOOD LEAD *on* THREADS

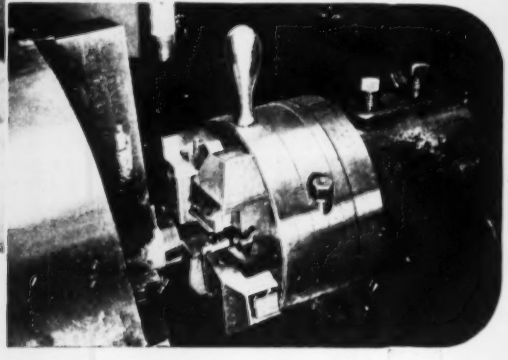
WITH LANDMATIC HEADS



The permanent nut action of Landis Tangential chasers assures accurate pitch threads throughout these crown part closing bodies used in bottling machinery. Landmatic Heads using Landis Tangential chasers cut 1⅝" 16 pitch USS threads ½" long on naval bronze forgings at therate of 50 SFM. Actual threading time is about 5 seconds.

The permanent throat feature of the chasers maintains initial cutting accuracy throughout the entire life of the tool. When the chaser is reground, no grinding is done on the throat. Thus the throat angle and nut action is never altered, and the chaser consistently produces threads accurate for lead. Write for Bulletins F-80, F-90 & A-50.

These photographs were taken in the Machine Manufacturing Division of the Crown Cork & Seal Company, Inc., Baltimore, Maryland.



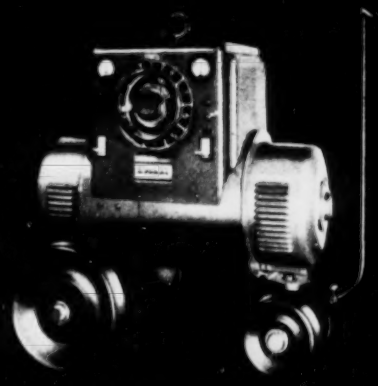
50th ANNIVERSARY 1900 1950

LANDIS *Machine* CO.

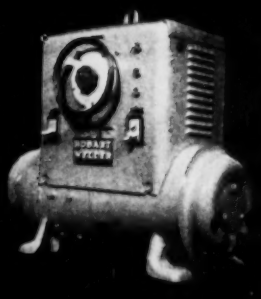
WAYNESBORO • PENNSYLVANIA • U. S. A.

HOBART

"ONE OF THE WORLD'S LARGEST BUILDERS OF ARC WELDERS"



Electric Drive Welder

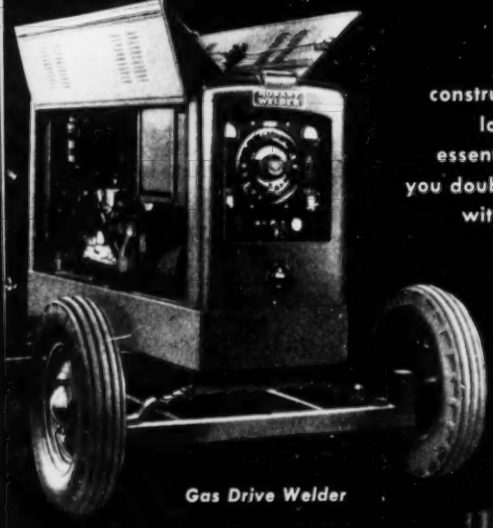


"Bantam Champ" Welder

"Pipeliner" Welder

arc welders

A Hobart Welder, with its advanced engineering and rugged, heavy duty construction, is best qualified to give you the lower costs and constant performance so essential to profitable production welding. If you doubt it, just check a Hobart point-for-point with any other machine on the market—or better still, just ask any Hobart owner. Mail coupon for full details.



Gas Drive Welder

electrodes

Made in a full range of types and sizes, Hobart Electrodes assure you better, faster, lower cost welds on all types of work.

Check the coupon and mail today

Hobart Brothers Company

BOX ST-13, TROY, OHIO

● HOBART BROTHERS COMPANY, BOX ST-13, TROY, OHIO

Without obligation, send information on items checked below.

☐ Bantam Champ Welder ☐ Electric Drive Welder ☐ Pipeliner Welder
☐ Gas Drive Welder. Send me ☐ Welder Catalog ☐ Electrode Catalog
☐ Accessory Catalog.

NAME _____ POSITION _____

FIRM _____

ADDRESS _____

FREE!

☐ "How to get Better Welds." Valuable new vest pocket booklet.

somewhere in your building,
lurking like a cat....
fire is ready to pounce.
In flammable liquids,
electrical equipment, record
vaults. Your surest protection
is a Kidde Fully Automatic
CO_2 Fire Extinguishing System.

...quick as a mouse, check the "Yellow Pages" for your KIDDE dealer

Kidde

Walter Kidde & Company, Inc.,
160 Main Street, Belleville 9, N. J.
Walter Kidde & Company of Canada, Ltd., Montreal, P. Q.

LETTERS
TO THE EDITORS

Scholars Use STEEL

We have been receiving STEEL for the past year and value it very highly. It is in constant use by the students of the Milwaukee School of Enginering.

Annually, there are better than 2000 young men taking our courses. There have been over 48,000 students who have attended the Milwaukee School of Engineering in its 50-year history.

A. C. Schmidt
Milwaukee School of Engineering
Milwaukee

Research in Ferrosilicon

One large use for ferrosilicon is in its ground state for "heavy media separation" (sink-and-float process). This process is used extensively in refining iron ore.

We are interested in knowing what the potential for this type of ferrosilicon is. Would you have consumption figures to give us an idea of how much is used for heavy media separation?

Any information you can give us or suggestions as to where we could get some help would be greatly appreciated.

John H. Tattersall
senior market analyst
Carborundum Co.
Niagara Falls, N. Y.

• *We suggest you get in touch with E. W. Davis, director, Mines Experiment Station, University of Minnesota, Minneapolis.—ED.*

Historic Reference

Perhaps by chance, you may have a few copies in your file of reprints from the Mar. 18, 1926, issue, "Iron Trade Review," pages 703 to 706, an article by E. C. Kreutzberg, Delaware River Steel Co., Chester, Pa.

Vincent Landers
consulting engineer
New York

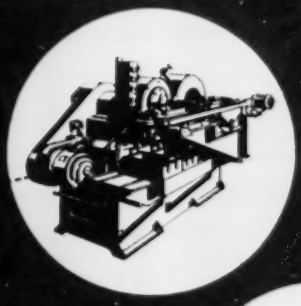
• *We have no more issues of the Mar. 18, 1926 issue of Iron Trade Review in stock.—ED.*

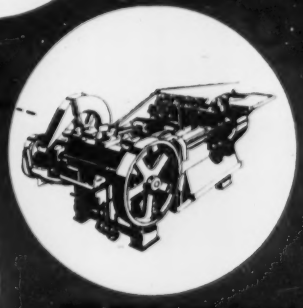
Looking Abroad

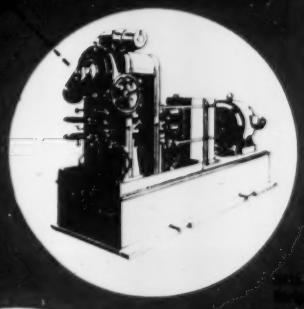
Our company would greatly appreciate your help in solving the following problem. One of the firms which we represent manufactures a piece of equipment of interest to metalworking

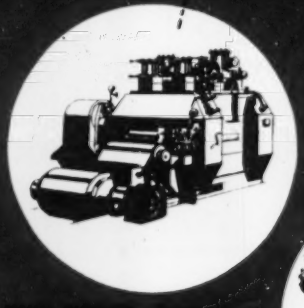
Continued on following page

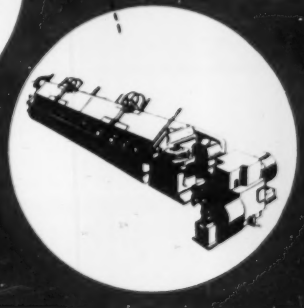
KINDS OF WATERBURY FARREL ANSWERS TO YOUR MASS PRODUCTION PROBLEMS











Within These Basic WF Equipment Lines, Individual Machines Are Custom-Engineered For Specific Applications

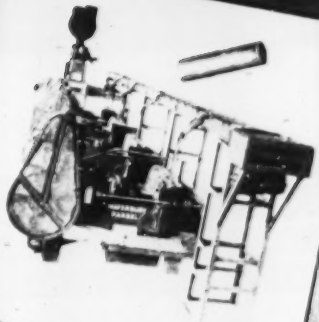
If your metal-working machinery problem falls into any of these five groups, there are good reasons for looking to Waterbury Farrel for the answer.

There's Waterbury Farrel's continuing engineering research with more than a century of machine building experience to draw upon. This results in soundly designed and thoroughly tested features which improve production.

There's Waterbury Farrel's world-wide reputation for rugged, long-lasting construction. This gives you the assurance that WF machines are built to provide long years of uninterrupted production.

Waterbury Farrel can custom-engineer special equipment or adapt a standard machine to fit your specific problem.

For further information, write for free booklets on any of the machines mentioned on this page or contact your nearest WF office.

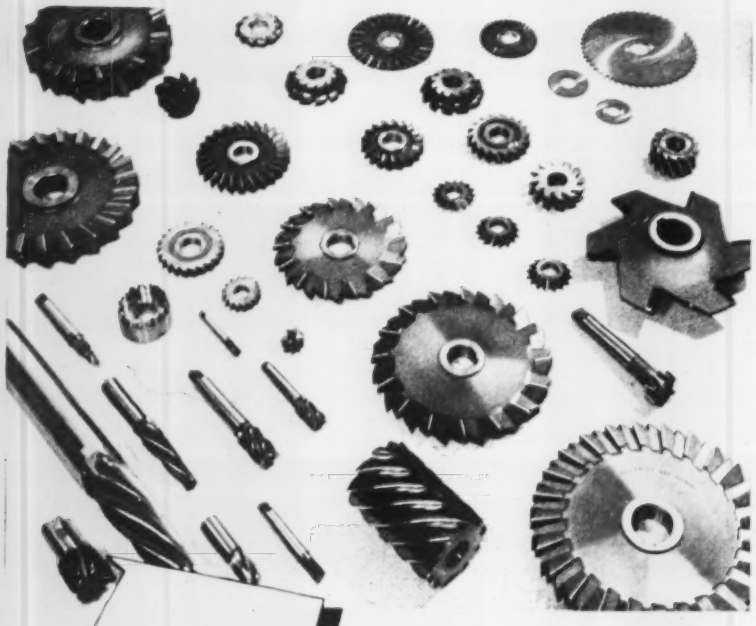


HERE'S A SAMPLE of Waterbury-Farrel mass production equipment in action. This complete WF automatic production unit combines a 40-ton double-acting, upright blanking and cupping press, a conveyor feed and four 7-station horizontal drawing presses to draw 340 zinc shells per minute.

FOUNDED WATERBURY FARREL 1851

WATERBURY FARREL FOUNDRY & MACHINE CO. • WATERBURY, CONN.

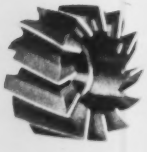
Offices: Chicago, Cleveland and Millburn, N. J.



THE *Complete Line*

GORHAM

END MILLS AND MILLING CUTTERS



For profitable solutions to production milling problems, call on Gorham! Over thirty years' experience in creating fine cutting tools is your assurance of satisfaction.

An extensive line of *standard* end mills and milling cutters is stocked by Gorham distributors. When you need *special* tooling, a Gorham Field Engineer surveys your problem and makes design recommendations for a tool to be "tailor-made" for your application by skilled Gorham craftsmen.

Ask your distributor for Gorham "standards." For "specials," call in your nearby Gorham Field Engineer. They're both well qualified to help you . . . and backed by unmatched experience and facilities. For profitable solutions to milling problems, call on Gorham! There's no obligation.

Write for free 120 page catalog. Shows entire line, contains valuable engineering information.

Gorham TOOL COMPANY

"EVERYTHING IN STANDARD AND SPECIAL CUTTING TOOLS"

14401 WOODROW WILSON • DETROIT 3, MICHIGAN

WEST COAST WAREHOUSE: 576 North Prairie Ave., Hawthorne, Calif.

LETTERS

Concluded from preceding page

firms with sizable capacity and which use a conveyorized paint spraying department in their operation. We are engaged in acquainting firms, of the type described above, in foreign countries with our equipment.

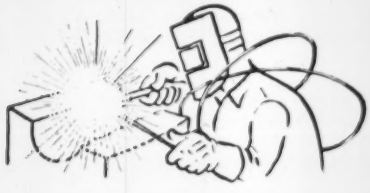
We wonder, therefore, whether your magazine, or a source known to you, has made a survey of the larger-sized metalworking firms in foreign countries with names and general description of products manufactured.

If such a survey or such a listing is available, we would be most interested in securing the same.

F. L. Bligh
A. J. Aldorf Corp.
Chicago

• *A good source for names, addresses and some general information about foreign metalworking companies is Ryland's Coal, Iron & Steel Directory, published by "The Iron & Coal Trades Review," 49 Wellington St., Strand, London, W.C.2, England. You might also check the nearest local field office of the U. S. Department of Commerce for pamphlets "Metalworking Plants and Shops" covering the countries in which you are interested.—ED.*

Way To Double Die Life



May we have your permission to reprint the article "Welding Doubles Life of Forging Dies" (Sept. 8, p. 86). Also we'd like to have a number of tear sheets of that article if they're available.

Arthur L. Phillips
Eutectic Welding Alloys Corp.
New York

• *Tear sheets are sent. You may have permission to reprint the article.—ED.*

About Extrusion

We read about three steel fabricating processes recently and believe we've seen something on them in STEEL. However, we have been unable to find the articles and wonder if you could help us.

The three processes in which we're interested and for which we'd like page references are:

Anderson Forming by Drawing Process

Cold-extruding process for steel

Hot-extruding process for steel

Charles M. Wilson Jr.
sales research manager
Western Auto Supply Co.
Kansas City, Mo.

• *For cold extrusion see Jan. 1, 1951, p. 203; Jan. 1, 1951, p. 430; and Oct. 27, 1952, p. 71. For hot extrusion see Jan. 21, 1952, p. 79 and Mar. 17, 1952, p. 88. We can find nothing on the Anderson Forming by Drawing Process.—ED.*

for strong, tough ACSR cores

specify Pittsburgh Wire

Made especially for reinforcement of stranded aluminum electrical conductors, Pittsburgh A.C.S.R. Core Wire has the high-tensile strength, the toughness and the heavy uniform galvanized coating to enable you to make the best possible cable.

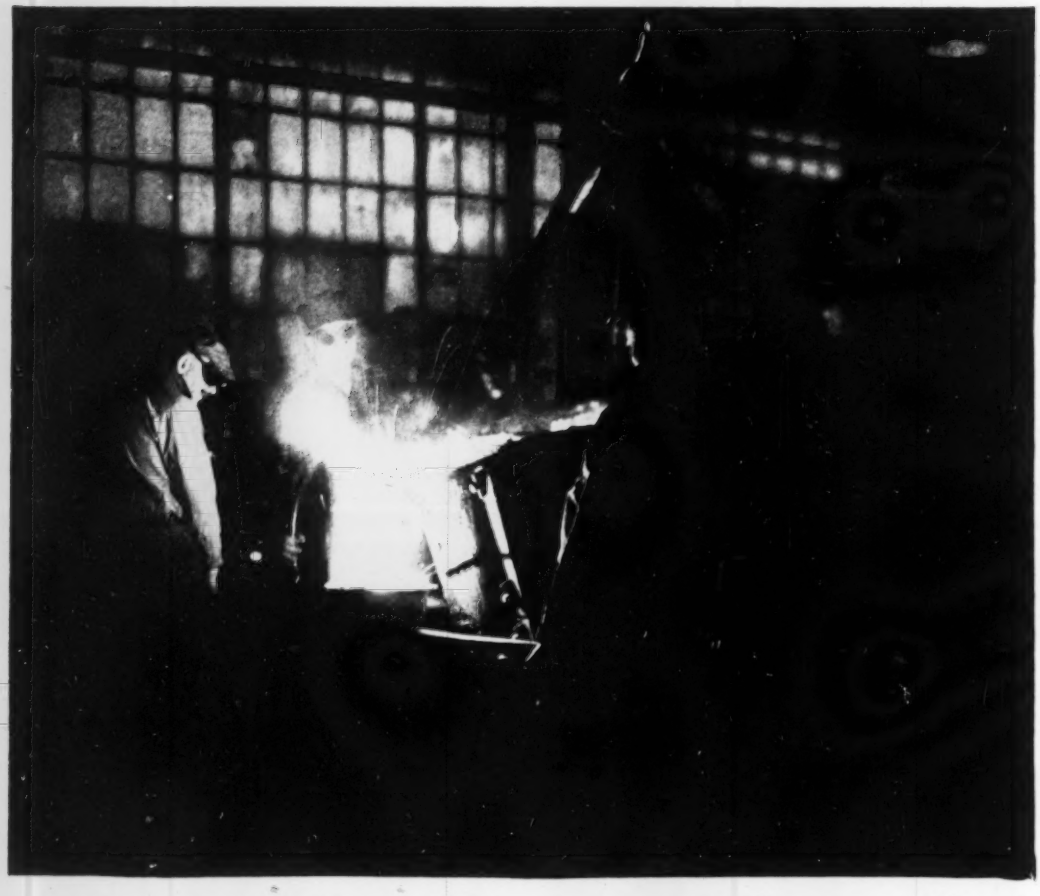
With this special wire, you get the benefit of the years of experience of one of the largest wire mills in the world. It has an inherent quality that stems from the selected high carbon, open-hearth steel — the uniformity of gage and the tight adherence of coatings that will work flawlessly in your stranding and closing machines. Available in diameters 0.1878" to 0.0525". For information on how to order, write today to Department S, Pittsburgh Steel Company, Grant Building, Pittsburgh 30, Pennsylvania.

Pittsburgh Wire

a product of **Pittsburgh Steel Company**

Pittsburgh, Pa.

YOUR DUST MAY NOT BE VALUABLE...



But It's Certainly Costly!

Because dusts and fumes may not be valuable, *don't think for a minute that they're not costly!* Uncontrolled, they do more damage to plants, machines, and men than any other production factor. Corrosive action on plant equipment, abrasive wear on production machines, and lowered manpower efficiency cover only part of their damaging effects.

Dracco Dust Control Equipment, engineered *exactly* to your plant requirements, will effectively eliminate your dust and fume hazards by trapping them at each source. Before they can attack either men or machines they are carried away in a completely enclosed system to a centralized waste disposal unit.

With Dracco Dust Control, your plant will be cleaner and your workers more efficient. Repair and maintenance bills for both plant and equipment will be lower.

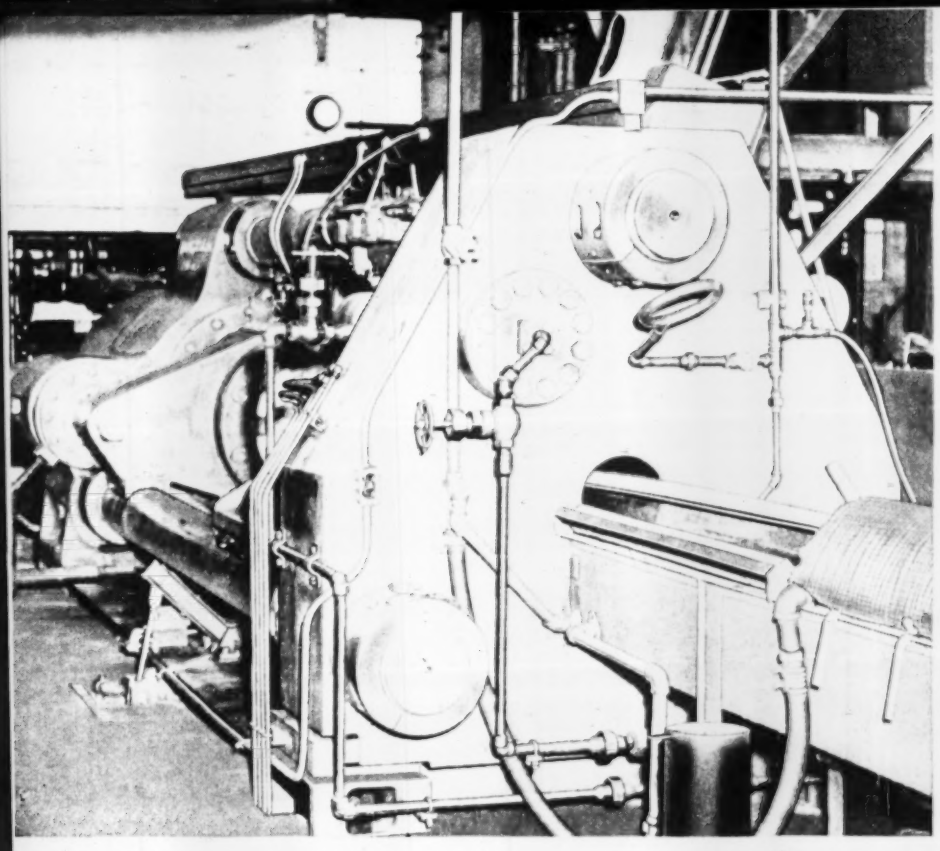
Why not investigate Dracco Dust Control methods and equipment for a cost-saving solution to your problem.

DRACCO CORPORATION
4090 East 116th Street
Cleveland 5, Ohio

Write today for the Dracco Engineering Data Sheet which will simplify an analysis of your specific problem.

DRACCO *Performance Proved*

DUST CONTROL EQUIPMENT • PNEUMATIC CONVEYORS



What's YOUR problem?

D. R. Clay, of Standard Oil's Grand Rapids, Michigan, office, is the lubrication specialist who has helped Light Metals Corporation keep maintenance of hydraulic units at a minimum through use of STANOIL Industrial Oil.

He is one of many Standard Oil specialists located throughout the Midwest. These men have the practical experience and special training to handle lubrication problems on any type of operation.

Take advantage of the service offered by the lubrication specialist nearest your plant. You can contact him easily by phoning your local Standard Oil Company (Indiana) office. With his help, find how many different oils in your plant can be replaced by STANOIL Industrial Oil on such applications as:

Air compressors . . . no sticking or clogging of valves, less oil consumption in splash or circulating systems.

Speed reducers . . . less wear of gears and bearings during frequent cold starts or prolonged high-temperature operation.

Steam turbines . . . freedom from emulsions and sludge, fewer oil changes necessary.

Ring-oiled bearings . . . rings function immediately on starting, less bearing wear.

Circulating and bath systems . . . one oil for a wide variety of jobs.

Puts squeeze on hydraulic press maintenance...

● Shown above is the 1250-ton hydraulic press used by the Light Metals Corporation of Grand Rapids, Michigan, for extruding variously shaped sections of aluminum. When this press was installed recently, officials gave the important hydraulic oil job to STANOIL Industrial Oil. They based that decision on their own experience with this outstanding oil.

That experience covered over four years' use of STANOIL in the hydraulic system of a 315-ton extrusion press. STANOIL has served continuously in this press without being changed or removed for oil maintenance. The hydraulic oil system has never been cleaned and has remained entirely free from deposits and varnish. Hydraulic operation has been efficient at all times.

The experience of the Light Metals Corporation is your assurance of STANOIL's ability to reduce hydraulic system maintenance to a minimum in your plant. This

STANOIL
TRADE MARK
Industrial Oil

versatile oil will provide clean, dependable lubrication for such a variety of equipment as air compressors, reduction gears, and electric motors. The Standard Oil lubrication specialists will help you make the most effective use of STANOIL. Phone him at your local Standard Oil (Indiana) office. Or write, Standard Oil Company, 910 S. Michigan Ave., Chicago 80, Ill.

STANDARD OIL COMPANY **STANDARD** *(Indiana)*

NOW you can

BRIGHT–ANNEAL STAINLESS

on a continuous production basis, with The

SARGEANT & WILBUR

Controlled Atmosphere

CONVEYOR FURNACE

PARTS MADE OF STAINLESS can be

BRIGHT-ANNEALED,

BRIGHT-HARDENED, or

BRIGHT-BRAZED without oxidation . . . they come out scale-free, bright, and clean. No pickling required, no tumbling, no sand blasting.

With our special S. & W. alloy for bright-brazing stainless, the color matches the metal; resists dulling; and the joint is practically invisible. *Gold and silver parts are soldered in the same continuous-production furnace with equal success.*

Your samples processed free. If you want to see some of your own work bright-annealed, bright-hardened, or bright-brazed in a conveyor furnace, send us samples and specifications.

SARGEANT & WILBUR, INC.
180 Wooden St.
PAWTUCKET, R. I.

Send your illustrated folder "How to BRIGHT-ANNEAL STAINLESS in the S. & W. Conveyor Furnace."

Name .....

Company .....

Address .....

Representatives:
NEW YORK CITY and PENNSYLVANIA Gerald B Duff, 68 Clinton Ave., Newark, N. J.; MICHIGAN and NORTHERN OHIO M. C. Schwer, 2970 W. Grand Blvd., Detroit 2, Mich.; NEW ENGLAND James J. Herkis, 180 Wooden St., Pawtucket, R. I.

STEEL

The Weekly Magazine of Metalworking

Editor-in-Chief, EARL L. SHANER — *Editor*, IRWIN H. SUCH
Managing Editor, WALTER J. CAMPBELL
Assistant Managing Editors, VANCE BELL, JOHN S. MORGAN

News and Markets

WM. M. ROONEY	*Market Editor*
FRANK R. BRIGGS	*Associate Editor*
ARTHUR W. ZIMMERMAN	*Assistant Editor*
JOHN KELSEY	*Assistant Editor*
ROBERT O. JAYNES	*Assistant Editor*
FLOYD G. LAWRENCE	*Assistant Editor*
ROBERT M. LOVE	*Assistant Editor*
H. VANYORX CALDWELL JR.	*Assistant Editor*
MARY T. BORGERHOFF	*Assistant Editor*

Engineering and Production

EDWIN L. KARPICK	*Engineering Editor*
ALLEN G. GRAY	*Technical Editor*
J. D. KNOX	*Steel Plant Editor*
ROBERT F. HUBER	*Machine Tool Editor*
WM. R. WOLFE	*Assistant Editor*
THOMAS F. HRUBY	*Assistant Editor*
DOLORES K. MAILLE	*Assistant Editor*
NANCY SHAFFER	*Editorial Asst.*

Resident Editors

New York 17 — 60 East 42nd St.
B. K. PRICE, L. E. BROWNE, SAMUEL W. BAKER
Murray Hill 2-2581

Chicago 11 — 520 North Michigan Ave.
E. F. ROSS
Whitehall 4-1234

Pittsburgh 19 — 2837 Koppers Bldg.
ROBERT E. HALL
Atlantic 1-3211

Detroit 2 — 6560 Cass Ave.
HOWARD C. TUTTLE
Trinity 5-3024

Washington 4 — 1123 National Press Bldg.
E. C. KREUTZBERG
Executive 6849

London, 2 Caxton St., Westminster S.W. 1
VINCENT DELPORT
European Editor

Editorial Correspondents

Birmingham	R. W. KINCEY, Birmingham 3-1121	Seattle	R. C. HILL, Melrose 1895
Buffalo	L. G. FELDMANN, Cleveland 5353	Dallas	C. K. CATES, Riverside 4355
St. Louis	MAC L. HUTCHENS, Republic 7752	Toronto	F. S. TOBIN, Empire 4-9655
Youngstown	GEORGE R. REISS, 7-1471	Birmingham, Eng.	J. A. HORTON
Los Angeles	NORMAN LYNN, Hudson 2-4376	Paris, France	LEON JACHON-PHOM
San Francisco	EDWIN HAVERTY, Yukon 6-5151	Liege, Belgium	M. JACQUES FOCLION
		Dusseldorf, Germany	DR. HERBERT GROSS

BUSINESS STAFF

Business Manager, J. W. ZUBER

Advertising Manager	C. H. BAILEY	*Circulation Manager*	G. R. EBERSOLE
Production Manager	A. V. ANDERSON	*Market Statistics*	G. J. AUNER
Promotion-Research Mgr.	S. F. MARINO	*Mail & List Service*	BETTY HINTON
Classified Advertising Mgr.	DORIS ROBBINS	*Reprints*	C. B. NILES

Advertising Representatives

New York 17 — 60 East 42nd St.
E. W. KREUTZBERG, K. A. ZOLLNER
Murray Hill 2-2581

Farmington, Conn. — 12 Farmstead Lane
CALVIN FISHER, JR.
Farmington 7-1756

Pittsburgh 19 — 2837 Koppers Bldg.
S. H. JASPER, J. C. SULLIVAN
Atlantic 1-3211

Cleveland 13 — Penton Building
D. C. KIEFER, H. G. ROWLAND
Main 1-8260

Cincinnati 30 — 5568 Beechmont Ave.
E. L. FRANKE—Parkway 3640

Detroit 27 — 14583 Longacre Rd.
C. A. TALLINGER—Logan 2-3868

Chicago 11 — 520 North Michigan Ave.
I. C. PELOTT, W. L. POLAND, JOHN W. VAUGHAN
Whitehall 4-1234

Los Angeles 48 — 6262 Commodore Sloat Dr.
F. J. FULLER—Webster 1-6865

Griffin, Georgia — 331 South 12th St.
FRED J. ALLEN—Griffin 7854

Circulation Representatives

H. R. DUNNE, C. A. PRICE

CCA — NBP — MPA

Published Every Monday by

THE PENTON PUBLISHING CO., Penton Bldg., Cleveland 13, Ohio

President and Treasurer	G. O. HAYS
Chairman	E. L. SHANER
Vice Pres., Director of Advertising	R. C. JAENKE
Vice Pres. and Secretary	F. G. STEINEBACH
Asst. Secy. and Asst. Treas.	J. P. LIPKA

Also Publisher of FOUNDRY, MACHINE DESIGN, NEW EQUIPMENT DIGEST

Member of Controlled Circulation Audit, Inc., Magazine Publishers Association Inc., Society of Business Magazine Editors, and National Business Publications, Inc.

Sailor Beware! The Old Man of The Sea!

WHO has not read of Sinbad, as told in the Arabian Nights by glamorous Scheherazade?

Shipwrecked on a strange island, the unfortunate sailor came upon a weak old man. Moved by compassion, Sinbad took the feeble fellow on his back, carried him over the brook, gathered fruit and fed him. But when Sinbad asked him to get down, the old man refused, wrapping his legs about his neck, almost strangling him.

The sailor fainted and fell down, yet the old man clung ever closer. He rained blows on Sinbad, driving him about without rest, to pick fruit and do his pleasure. This went on and on, until the desperate sailor made wine from wild grapes to appease his own plight. One day noting Sinbad's pleasure, the old man snatched a gourd of wine and gulped it down. Completely drunk, he loosened his grip and Sinbad threw him off. Saved by a passing ship, his rescuers said, "You are the first ever to escape strangling by the Old Man of the Sea".

Dating back hundreds of years, the Old Man is an allusion familiar to everyone. He is a warning figure today. Our nation, surviving the storms of two world wars, wanders down strange ways. With kindly intent and glorying in its own strength, America is tempted to shoulder the Old World and its age-worn problems. But weak and feeble as the Old World appears to be, let us beware! How easy to assume a burden which would quickly exhaust our strength, strangle us as a nation, and in the end leave the world as weak and exhausted as it was before our foolish undertaking!

QUALITY YOUNGSTOWN SERVICE

The Youngstown Sheet and Tube Company

General Offices--Youngstown 1, Ohio

Export Offices--500 Fifth Avenue, New York

MANUFACTURERS OF CARBON ALLOY AND YOLOY STEELS

RAILROAD TRACK SPIKES - CONDUIT - HOT AND COLD FINISHED CARBON AND ALLOY BARS - PIPE AND TUBULAR PRODUCTS - WIRE - ELECTROLYTIC TIN PLATE - COKE TIN PLATE - RODS - SHEETS - PLATES.

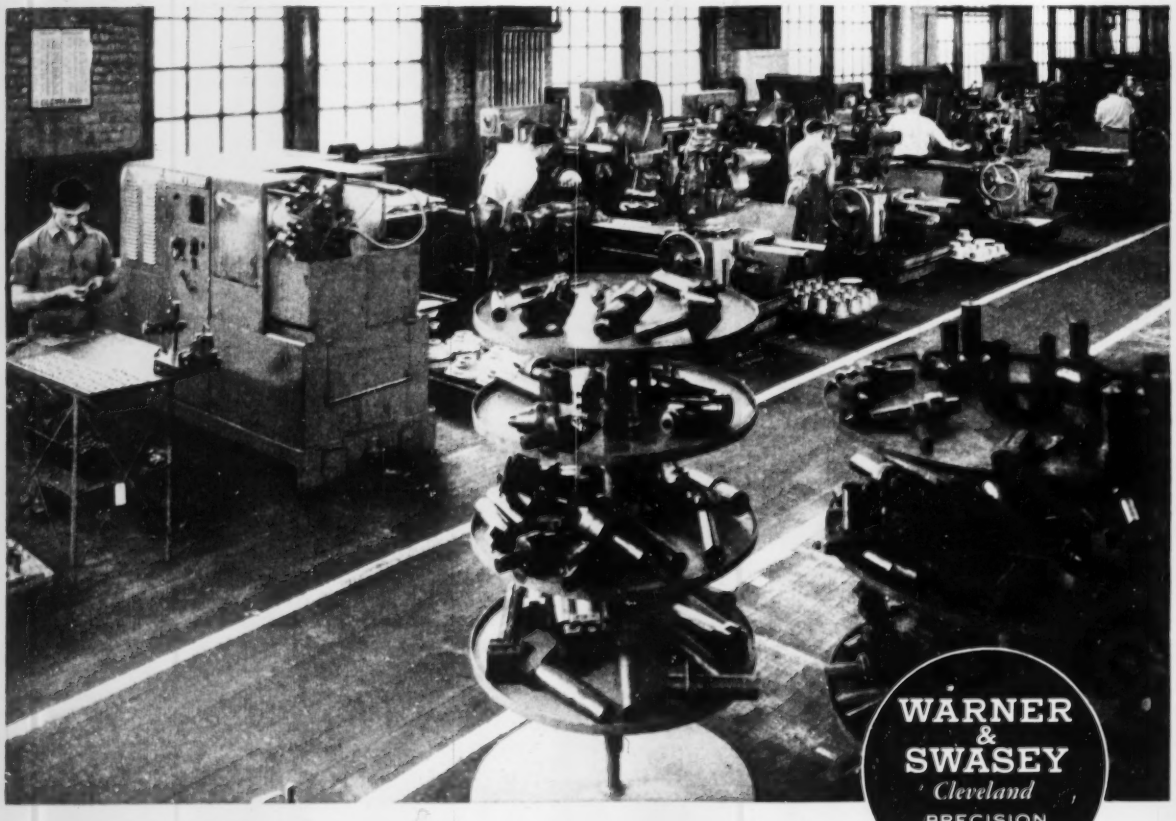
What's wrong with this picture

● Nothing at all! But chances are any veteran shop man will instantly ask, "What's the idea of having an 'Automatic' in the turret lathe department?"

The "idea" is simply this: Warner & Swasey 1-AC Single Spindle Automatics can handle many of your regular small and medium lot runs *more profitably* than your hand-operated machines.

That's because the 1-AC operator can change setups quickly for the job at hand. There are no cams to change—he simply re-adjusts trips for feed, speed and stroke controls. And, on certain jobs, one man on a 1-AC can turn out more work, of more uniform accuracy, than two men on hand-operated machines.

To find out whether 1-AC Single Spindle Automatics fit into your production picture, call in your nearest Warner & Swasey Field Representative. He'll study your jobs and methods and advise you correctly.



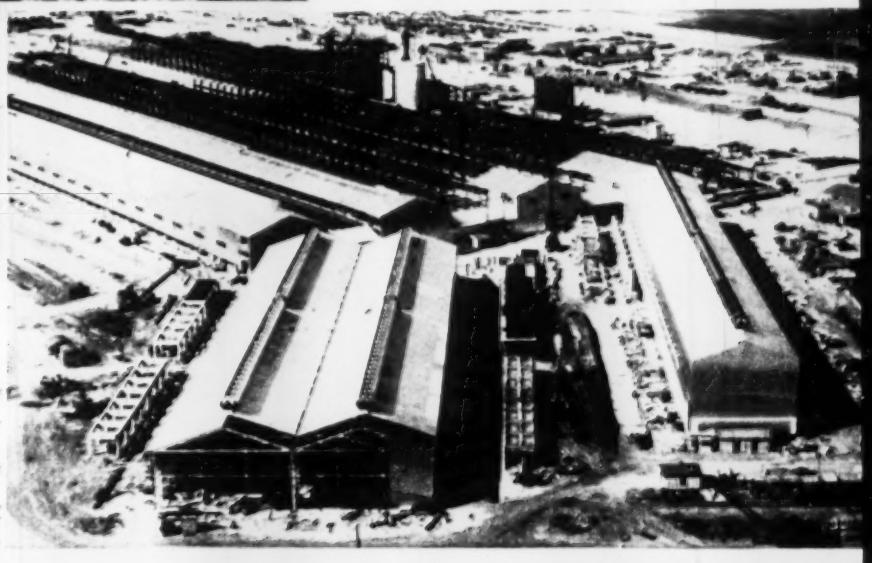
WARNER & SWASEY
Cleveland
PRECISION MACHINERY SINCE 1880

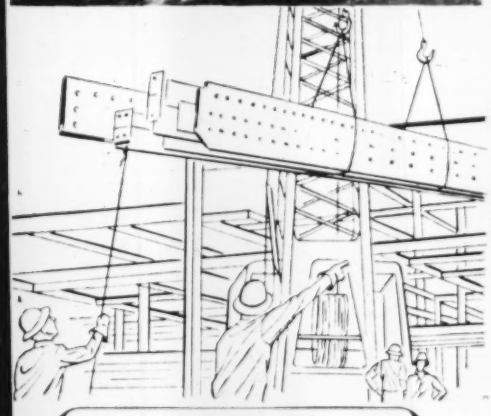
YOU CAN PRODUCE IT BETTER, FASTER, FOR LESS WITH WARNER & SWASEY MACHINE TOOLS, TEXTILE MACHINERY, CONSTRUCTION MACHINERY

JONES & LAUGHLIN STEEL CORPORATION'S multi-million dollar expansion project on Pittsburgh's South Side.

• • •

REYNOLDS METALS COMPANY, San Patricio Plant, Corpus Christi, Texas, for increased production of aluminum.





AMERICAN BRIDGE

lends a helping hand

as nation's essential industries continue to expand!

LESS spectacular than city skyscrapers, but just as important to our nation's defense and economic growth, are the unheralded industrial buildings which have been built or are now under construction all over this great country of ours.

Of the thousands of such steel-frame structures built by American Bridge, we are perhaps proudest of those we have done, or are now working on, for vital industries. Included in this group are many important metal producers.

To be selected by these leading steel and aluminum producers is a splendid tribute to the engineering, fabricating and erecting know-how of the American Bridge organization.

It is also your assurance that American Bridge has the fabricating facilities, erecting equipment and skilled personnel to handle any type of steel-frame construction with exacting precision, thoroughness and speed . . . any time, anywhere.

If you would like to know more about the advantages of American Bridge fabricated and erected steel construction, call our nearest office.

Major Industrial Buildings for Metals Production Recently Fabricated and Erected by AMERICAN BRIDGE

- **ALUMINUM COMPANY OF AMERICA**
  Point Comfort, Texas
- **JONES & LAUGHLIN STEEL CORPORATION**
  Pittsburgh, Pa.
- **LONE STAR STEEL COMPANY**
  Daingerfield, Texas
- **REPUBLIC STEEL CORPORATION**
  Cleveland, Ohio
- **UNITED STATES STEEL COMPANY**
  Fairless Works
  Morrisville, Pa.

AMERICAN BRIDGE DIVISION, UNITED STATES STEEL CORPORATION
GENERAL OFFICES: 525 WILLIAM PENN PLACE, PITTSBURGH, PA.

Contracting Offices in: AMBRIDGE · ATLANTA · BALTIMORE · BIRMINGHAM · BOSTON · CHICAGO · CINCINNATI · CLEVELAND · DALLAS · DENVER · DETROIT · DULUTH · ELMIRA · GARY · MEMPHIS · MINNEAPOLIS · NEW YORK · PHILADELPHIA · PITTSBURGH · PORTLAND, ORE. · ROANOKE · ST. LOUIS · SAN FRANCISCO · TRENTON — UNITED STATES STEEL EXPORT COMPANY, NEW YORK

AMERICAN BRIDGE

USS

UNITED STATES STEEL

NOW CRUCIBLE TOOL STEEL available in HOLLOW FORM

Available in these famous Crucible brands:
Ketos® Airdi 150
Sanderson Carbon Tool Steels

here's what it means to you:

Why pay for the steel in the hole you drill out! Manufacturers of tool steel parts with cut-out centers can now get Crucible Tool Steel as hollow rings and bars! If you use tool steel in sleeves, ring gauges, rolls, stamp dies, cams, slitters . . . or in any of a hundred other ring-shaped parts—find out about Crucible Tool Steels in *hollow form*.

Familiar steels like Sanderson, Ketos, and Airdi 150 now come to you with machine-finished inside and outside diameters in a wide range of sizes. Selecting the size and grade you need reduces your finishing costs to the vanishing point. And it's immediately available!

Crucible's strategically-located warehouses now have complete stocks of Crucible Hollow Tool Steel. To take advantage of the new product, simply let your nearest warehouse know the dimensions you need. They will cut you a ring of Crucible Hollow Tool Steel to meet your O.D. and I.D. and length requirements.

For full information and literature on new Crucible Hollow Tool Steel, call your nearest Crucible warehouse today . . . or write for new brochure describing this new product! Address Dept. S, Crucible Steel Company of America, Chrysler Building, N. Y., N. Y.

CRUCIBLE first name in special purpose steels

53 years of Fine steelmaking

HOLLOW® TOOL STEEL

CRUCIBLE STEEL COMPANY OF AMERICA • TOOL STEEL SALES • SYRACUSE, N. Y.

drilling eliminated

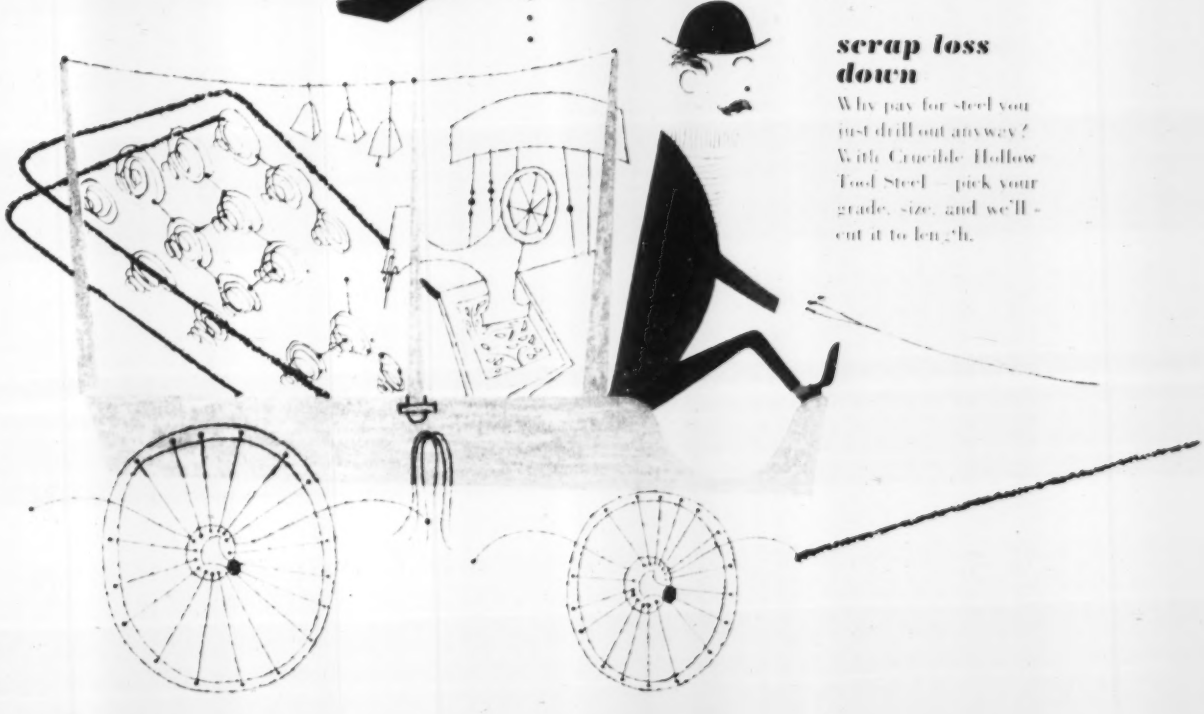
You get a semi-finished ring, cut to your specifications in our Warehouse, right from stock. That means boring, drilling are eliminated. Your first and last step is the finishing!

immediately available

Crucible Warehouses in your area are fully stocked and ready to serve you with this new Crucible product.

machine time cut

Manufacturing costs go down when you use Crucible Hollow Tool Steel. Expensive machining is eliminated. Production time per unit is lowered. Machine capacity is increased.



scrap loss down

Why pay for steel you just drill out anyway? With Crucible Hollow Tool Steel — pick your grade, size, and we'll cut it to length.

GISHOLT'S *easier operation*

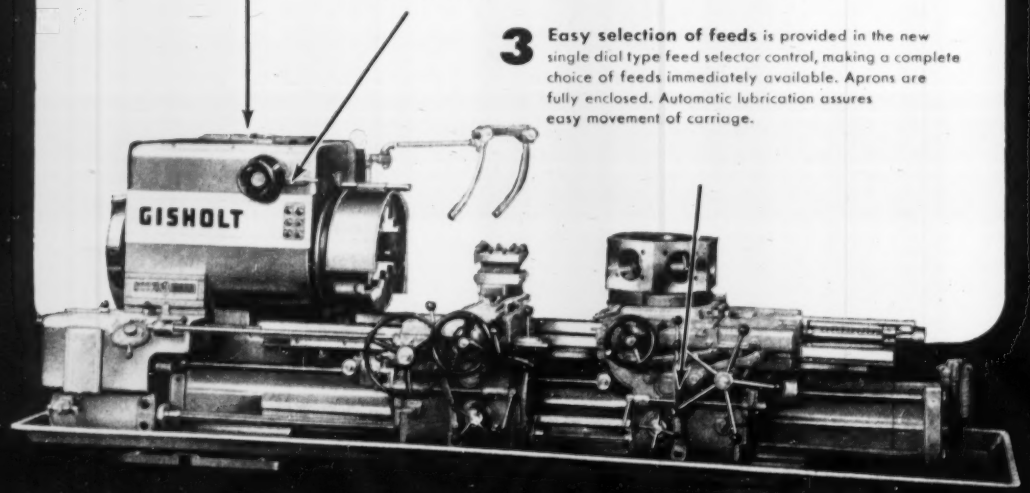
saves you time and money...

This 21,000 lb. machine requires no more operating effort than turret lathes ⅓ its weight. Despite its great power and rigidity for heavy-duty work, the new Gisholt 4-L is so fast and responsive, it can handle light work of both large and small diameters. With many machine functions entirely automatic, waste time is eliminated. Fatigue is reduced to a new minimum. Training time is shortened. Operator output is faster—more nearly constant throughout the day.

1 **Hydraulic Speed Selector** eliminates manual gear shifting. Spindle speed changes are made instantly by power without stopping the spindle or releasing the main drive clutch. Can be operated either direct or pre-set.

2 **Central control panel** eliminates manual effort. Provides responsive finger-tip, push-button control for start, stop, reverse, inching, chucking, and coolant supply. Automatic braking brings the work smoothly and quickly to rest.

3 **Easy selection of feeds** is provided in the new single dial type feed selector control, making a complete choice of feeds immediately available. Aprons are fully enclosed. Automatic lubrication assures easy movement of carriage.



The new Gisholt 4-L Saddle Type Turret Lathe provides 31⅜" swing over the ways, 27" swing over carriage wing, 9½" to 12½" spindle bores and 63" longitudinal working travel of turret carriage to accommodate an unusually wide range of work. Ask Gisholt engineers about this modern, easier operating Gisholt as applied to your specific machining requirements. New literature is available.

GISHOLT MACHINE COMPANY
Madison 10, Wisconsin

THE GISHOLT ROUND TABLE
represents the collective experience of specialists in the machining, surface-finishing and balancing of round and partly round parts. Your problems are welcomed here.

TURRET LATHES • AUTOMATIC LATHES • SUPERFINISHERS • BALANCERS • SPECIAL MACHINES

fits into your production picture...

strip steel by WEIRTON

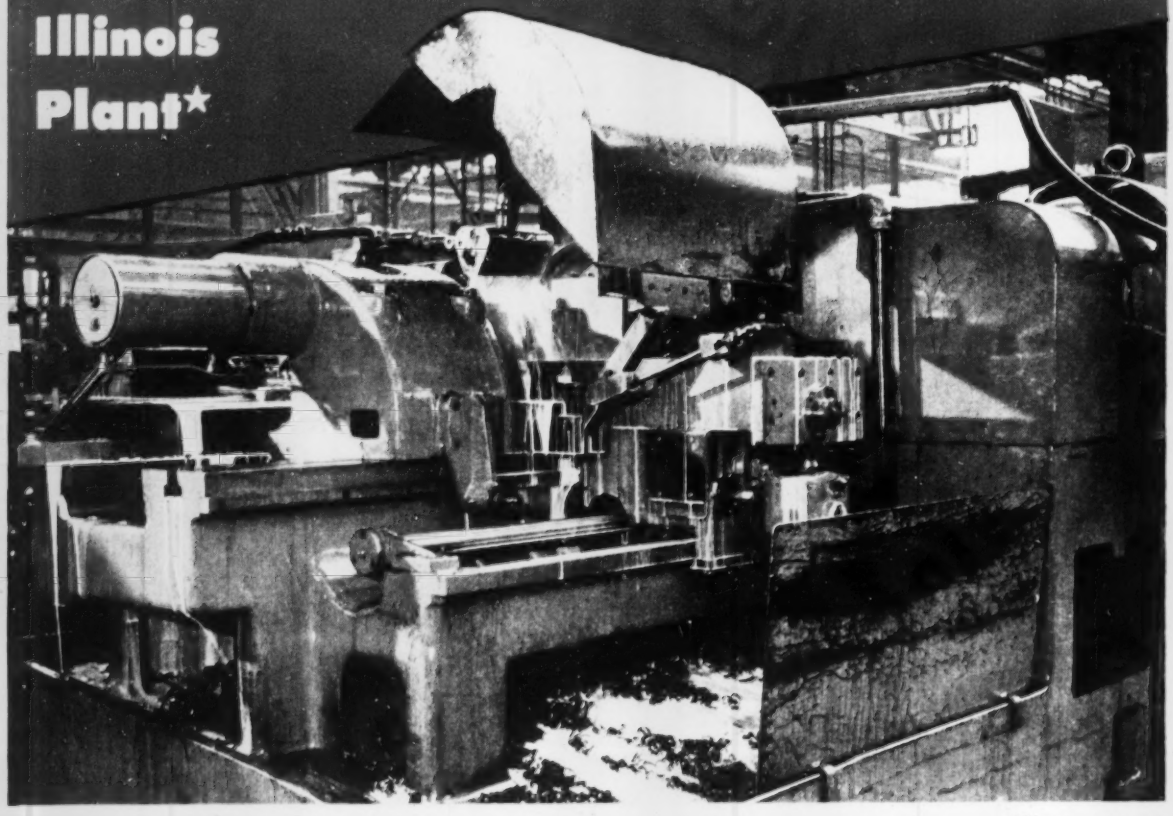
Cold-rolled strip steel is made by Weirton to satisfy the most exacting requirements of its users. Superior equipment and methods, along with complete control of materials from mine to finished strip, assure the remarkable uniformity for which Weirton is noted.

Weirton customers enjoy *two* important advantages—the uniform quality of Weirton steel, and the dependability of Weirton service. In short, Weirton makes good steel and gets it to you.

WEIRTON STEEL COMPANY
WEIRTON, WEST VIRGINIA

NATIONAL STEEL CORPORATION

STABILITY . . . of Texaco Soluble Oil Emulsions proved in huge Illinois Plant*



*Name on request.

This plant operates over 5,000 metal working machines of various types, and is located in a hard water area where emulsions of soluble oil are ordinarily difficult to maintain. Emulsions of *Texaco Soluble Oil HW*, however, have been used for years with success.

Last year, for instance, circumstances forced a two-month shutdown of the plant, and the emulsions of *Texaco Soluble Oil HW* were left standing in tanks and lines. When production was resumed, the operators found the Texaco emulsions still in satisfactory condition. There was comparatively little separation, little odor problem, and no wholesale cleaning of tanks or lines was necessary.

Here you have proof of the stability for which emulsions of Texaco Soluble Oils are famous — stability that means better cooling and lubrication, cleaner plant, longer tool life, lower oil consumption and maintenance costs.

Why not enjoy these benefits in your plant? There is a complete line of *Texaco Cutting, Grinding and Soluble Oils* to enable you to do all your machining better, faster and at lower cost. A Texaco Lubrication Engineer will gladly advise you. Just call the nearest of the more than 2,000 Texaco Distributing Plants in the 48 States, or write:

The Texas Company, 135 East 42nd Street, New York 17, N. Y.

TEXACO

TEXACO CUTTING, GRINDING AND SOLUBLE OILS FOR FASTER MACHINING

TUNE IN . . . TEXACO STAR THEATER starring MILTON BERLE, on television Tuesday nights. METROPOLITAN OPERA radio broadcasts Saturday afternoons.

STEEL

The Metalworking Outlook

January 26, 1953

No Tax Cuts Soon

Don't count on a general tax reduction this year. In appearing before the Senate Finance Committee, which unanimously approved his appointment as secretary of the treasury, George M. Humphrey made it clear that a balanced budget is the first objective of the Eisenhower administration. He does say that the excess profits tax is in principle a "bad law." His department plans a thorough study of the whole tax structure because the new treasury secretary believes "our tax burden is heavier than the country can bear for any extended time." But such a survey won't come soon.

Fireworks in Congress

Fireworks are coming up in Congress over the government's participation in business activities. Several bills introduced in the new Congress seek liquidation of the RFC, and a new proposal by Rep. Ralph W. Gwinn (Rep., N.Y.) calls for a constitutional amendment to prohibit the U.S. from engaging in any business—professional, commercial, financial or industrial enterprise—except as specified in the Constitution, which isn't very much. That supplements the Ferguson Bill which calls for an investigation of government-owned business enterprises with the object of discontinuing them, turning them over to states or turning them over to private industry.

Defense Agencies Mark Time

Activities in the defense agencies are still decidedly slow. One move that would have been important was killed just before President Eisenhower took office. That was the proposal to increase the steel allotments for consumer durables for the second quarter from 70 to 90 per cent of the base period. NPA officials and Ex-Defense Mobilizer Henry H. Fowler chopped it down with the argument that the new President may have a program requiring the surplus steel.

Matter of Money

Average compensation of top executives rose 5 per cent in fiscal 1951-52, says American Management Association. Gross average weekly earnings of manufacturing hourly workers climbed 9 per cent in calendar 1951 over 1950. Middle management people—those between the top policy-making and first-line supervisory jobs, earned an average of $12,000 in fiscal 1951-52.

What Makes an Executive?

Do your company's executive personnel have the six essential qualities? According to John Neukom of McKinsey & Co., San Francisco, a man of executive caliber should have: Energy, enthusiasm and drive; excellent mental equipment; imagination; a sense of humor; attractiveness to others; and emotional stability.

Just in Case

One reason why Republic Steel Corp. will market steel kitchens under its own name will be to have an assured outlet for at least some of

Production Engineering News—p. 65 The Market Outlook—p. 107

its steel production in case times get bad. Republic President Charles M. White says: "We have overshot the mark by building, in three or four years' time, steel capacity which should have been added in a more orderly way . . . In only four peace time years, out of the 67 for which records exist, has the steel industry averaged 90 per cent operations. All four of those years have been since the war."

Go West and South, Young Men

Manufacturing industry is continuing a trend to move from the East to the South and West, particularly California and Texas. A Bureau of Labor Statistics study points out that manufacturing employment in the East has not changed much, while employment in other areas has risen sharply, except in the Great Lakes region where the pattern is mixed. Despite the shift, New York, with 5.8 million workers, is still the leading state with nonfarm employment.

More Power

Some 8.5 million more kilowatts will be added to the nation's generating capacity in 1953, compared with 6.1 million in 1952. As of last October, the installed capacity was 79.7 million kilowatts. You can expect some serious power shortages in 1953, notably in the Pacific Northwest, but the problem won't be alarming in most other industrial areas.

Straws in the Wind

A mere 25 U.S. Steel Corp. employees on the railroad at the Ohio Works in Youngstown took a wildcat strike last week and idled 8000 to 10,000 at the Ohio and McDonald plants which had to close down five blast furnaces, 14 open hearths, a bessemer unit and primary mills . . . An amendment to the armed services procurement regulations dealing with Air Force contract termination will be out in a few days . . . Also out in a few days will be an Office of Defense Mobilization study of the steel industry which will point out some areas where more finished steel would be needed in the event of full mobilization.

What Industry Is Doing

Prices will hold or rise slightly in 1953, predict 82 per cent of 1152 metalworking executives queried by STEEL (p. 37) . . . Foundry owners are wondering if their recent pass-through on prices will completely pass through (p. 38) . . . The Plant Maintenance Show in Cleveland reveals that manufacturers are showing considerably more interest in industrial housekeeping; maintenance costs may reach $17 billion this year (p. 39) . . . Nail producers are seeing their prices wobble as supply oversteps demand (p. 40) . . . Sales of the drop forging industry in 1952 rounded off at $600 million and may improve this year (p. 41) . . . More things will go into more different kinds of metal containers in 1953 than ever before; the container industry is currently the fourth largest consumer of the nation's steel (p. 48).

Remember how you longed for air conditioning last summer?

You swore you'd never go through another summer without air conditioning. Now—today—is the time to do something about next summer. Here's why:

Your Westinghouse Contractor isn't rushed now. His men can install your new unit faster, better . . . without overtime. He will save you money. And he will do the work when it suits *you*—without disrupting your business.

It will pay to select Westinghouse equipment because:

Westinghouse costs less to operate. Its refrigerant-cooled motor saves on electric power and upkeep. Its hermetically-sealed design means less maintenance, fewer service calls.

Westinghouse gives better performance. Only Westinghouse designs and builds all components. This means smoother operation and longer life, because all parts have been precision-built to work together.

Westinghouse has a full equipment line. Whatever you require, from 2 tons up, a Westinghouse system will match your needs. Only Westinghouse offers so complete an air conditioning line.

Interested? Want to do some advance planning? Then send for the Westinghouse Planning Guides. Or better still, call your local Westinghouse Air Conditioning Contractor for a free estimate. He'll be glad to help you. He's listed in the Yellow Pages of your classified directory.

YOU CAN BE SURE... IF IT'S

Westinghouse

AIR CONDITIONING

Westinghouse Electric Corporation
Air Conditioning Division
182 Damon Street
Hyde Park, Boston 36, Mass.

☐ Send me the "Planning Guide for Industrial Air Conditioning".

☐ I want a free estimate of the cost of air conditioning my premises.

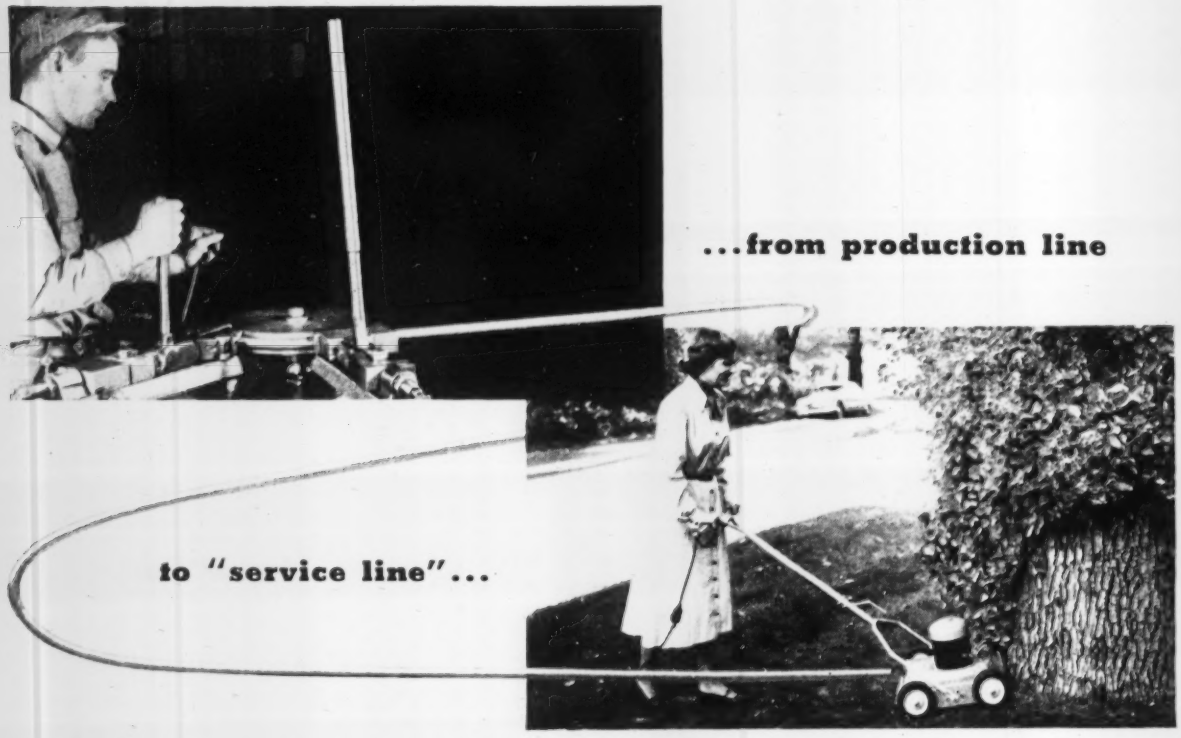
Name.....

Company.....

Address.....

City.....Zone.....State.....

J-80285



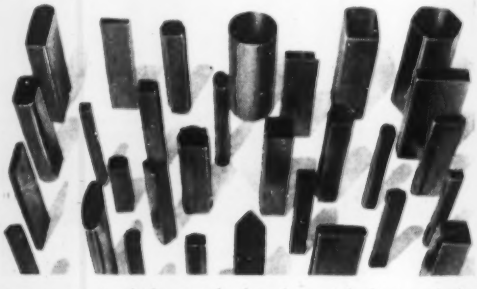
Armco Steel Tubing moves your products faster

To cut your shop costs . . . to give your products that extra "sales" appeal, look into Armco Welded Steel Tubing.

Used in place of angles and other solid sections, Armco Tubing simplifies design and speeds production. And its smooth surface makes your products more modern and attractive — more salable.

Tubular parts mean your products are stronger and lighter in service, too. Loaded as a beam, Armco Welded Tubing has less than one-fifth the deflection with the same amount of steel. And as a column, it offers more than five times the load-carrying capacity with the same amount of steel.

Armco Welded Steel Tubing comes in a variety of made-to-order shapes in Hot-Rolled or Cold-Rolled Steel; in ALUMINIZED (an aluminum-coated steel) and in ZINCGRIP (a specially zinc-coated steel). Our Tubing Specialists will help you select the *right kind* of tubing for your products. Write for further information.



These are some of the standard and special shapes of Armco Welded Steel Tubing. With either standard or special shapes, you can reduce fabrication time and costs, give your products a more substantial look.

ARMCO STEEL CORPORATION

MIDDLETOWN, OHIO, WITH PLANTS AND SALES OFFICES FROM COAST TO COAST
THE ARMCO INTERNATIONAL CORPORATION, WORLD-WIDE

ARMCO

Faith in Freedom

Of all the state papers a President of the United States is called upon to write and deliver, the most difficult is the inaugural address. It must be brief, concise and simple. In it, the new Chief Executive is expected to set forth his creed of government.

Last Tuesday's inaugural address of President Eisenhower conformed closely to this formula. In his creed the ultimate objective is world peace and the means to that end is our "faith that the future shall belong to the free."

"This faith," he said, "is the abiding creed of our fathers. It is our faith in the deathless dignity of man, governed by eternal moral and natural laws. This faith defines our full view of life. It establishes beyond debate those gifts of the Creator that are man's inalienable rights and that make all men equal in His sight!"

This restatement of the creed of our founding fathers is particularly timely, because in the present state of world affairs it differs so sharply from the code of our enemies. The President defined this difference clearly when he said that "the enemies of this faith know no god but force, no devotion but its use." The conflict between free men and the enemy is "no pallid argument between slightly different philosophies." Instead "freedom is pitted against slavery; light against dark."

Upon this clear-cut definition of the major problem confronting us, the President outlines nine principles for guidance. They are strength to deter the aggressor, no appeasement, recognition of free people to place country ahead of comfort, pledge not to meddle in other nations' affairs, co-operation with other free peoples, encouragement of productivity and profitable trade, continuation within the United Nations framework of regional groupings of free peoples, rejection of any insinuation that any race is inferior and determination to make the United Nations an effective force rather than a mere symbol "in our quest of honorable peace."

President Eisenhower's repeated emphasis upon our faith in freedom is reminiscent of Lincoln's second inaugural address. It should inspire renewed confidence in our drive for lasting world peace.

E. C. Shaner

EDITOR-IN-CHIEF

AWKWARD DILEMMA: By the time this issue reaches the desks of its readers, the dilemma in regard to the seating of Charles E. Wilson as secretary of defense probably will have been resolved one way or another. Most persons hope a solution may be found whereby his appointment may be sent to the Senate and confirmed by that body without compromise of sound principles.

The Wilson case differs from many others

only in degree. It happens that General Motors has more government contracts than any other corporation and that Mr. Wilson's stock holdings are larger than in most cases of similar nature. Also the tax factor introduces a more than ordinary penalty. Now that these problems have been aired in public, it behooves the lawmakers to determine what, if anything can be done to deal more fairly with similar situations in the future.

CONTAINERS—AN INDEX: If somewhere in the nation there is a student majoring in economics who is looking for a good subject for his graduating thesis, he might well consider the significance of the substantial proportion of American steel output that goes into metal containers. With a little research, he might be able to prove that the fact that containers constitute the fourth largest outlet for steel is a sort of a rough index of the standard of our living.

In a good year more than 6 million net tons of steel (p. 48) go into containers—cans, caps, barrels, drums, pails, cylinders and other metal cooperage. One executive, optimistic about the short-term prospect, is confident that "in 1953 there will probably be more things in more kinds of metal containers than ever before in history." This reflects a high degree of development of mass distribution of food, fuel and other goods.

MATURE FOR ITS YEARS: Persons who attended the Plant Maintenance Show and Conference in Cleveland last week (p. 39) witnessed an event that would be a credit to any organization with decades of experience behind it. Considering the gratifying attendance, the number of first-rate exhibitors and the interest displayed in exhibits and meetings, it is difficult to believe that this successful enterprise is only four years old.

That this combination show and forum has grown from infancy to near-maturity in such a brief period is highly significant. It reflects the rapidly changing aspects of maintenance problems arising from mounting labor costs and the accelerated mechanization of production operations. Plant maintenance not only is becoming more complex and more scientific, but it is also more closely meshed with the engineering problems of plant production. One exhibitor at the show highly pleased with its results was heard to say that the exhibits go beyond plant maintenance. He suggests that a more appropriate name would be "Plant Engineering and Maintenance Show."

JAPAN'S EXPORT TREND: Figures from a Japanese source reveal a rather surprising shift in the character of Nippon's exports during the prewar and postwar periods. In 1930 (p. 47), long before World War II, Japan's exports of iron, steel and machinery were only 3 per cent of her total exports of $726 million. In 1950, iron, steel and machinery accounted for 17.7 per cent of her total exports of $820 million and in 1951 they accounted for 25.6 per cent of a total of $1409 million.

The percentages for the fifties are influenced by the Korean situation, but there remains the question of what Japan's export pattern will be like if and when her natural market on the Asiatic mainland is restored to her. Sometimes we think of the iron curtain as a political nuisance. Its greater curse is its ban on natural market relationships.

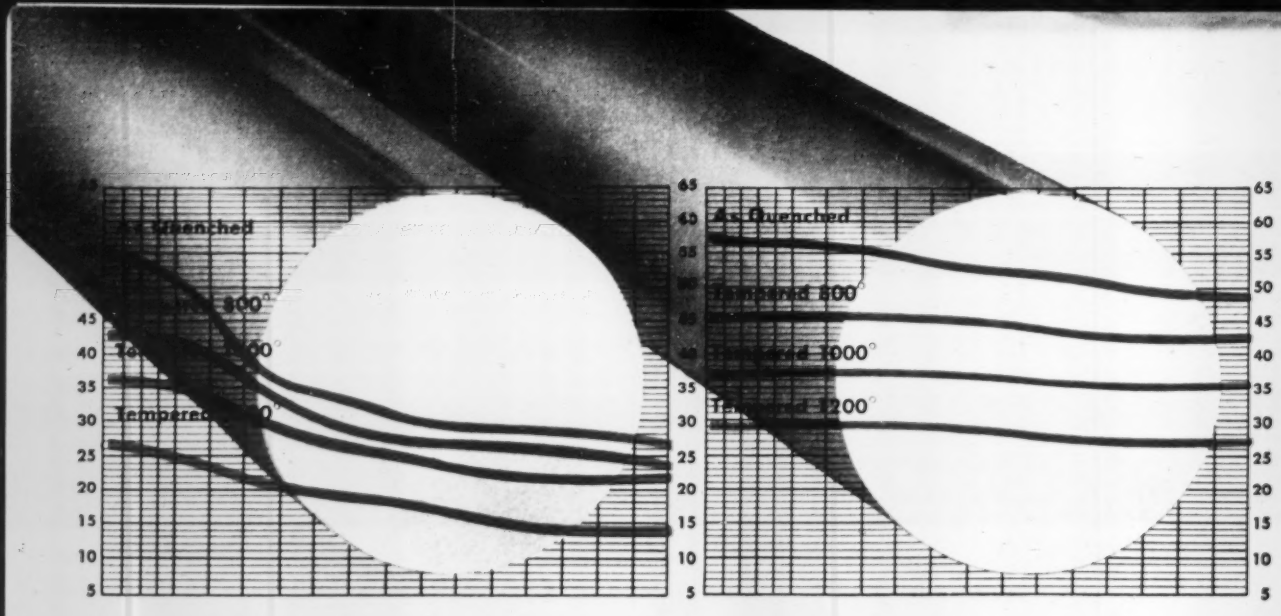
33rd, 34th or 49th? In last week's editorial it was stated that on Jan. 20 General Eisenhower would become the "33rd" President of the United States. In reporting the inaugural ceremonies some newspaper writers and radio and television commentators called him the "33rd" President but even more referred to him as the "34th."

Of course the confusion arises from difference of opinion as to whether Grover Cleveland should be counted as the 22nd President or as the 22nd and 24th. Those who count him twice do so for the sole reason that his terms were not consecutive. To those who count him once, this is a thin argument. If we count Cleveland twice, why not count Franklin Roosevelt four times and the two-term Presidents twice? On that basis, Dwight Eisenhower would be our 49th President.

We'll stick to 33. Any way you figure it, General Eisenhower is the 33rd person to become President.

NEW AUTOMATIC MACHINES at Firestone STEEL PRODUCTS CO. ASSURE ON-SCHEDULE DELIVERY OF YOUR DEFENSE SUB-CONTRACTS

YOU can always count on Firestone to deliver your metal stampings *on time* and at *lowest possible cost*. Latest-type high-speed automatic presses like the one shown here and modern, efficient straight-line production facilities are geared to fast, low-cost production. If your problem is medium or large-size stampings and you have to meet a deadline, wire or phone Firestone Steel Products Company, Metal Stampings Division, Akron 1, Ohio.



Same Alloy...but *What a Difference!*

Graphic Reason for Using Ryerson Certified Alloy Steel

Here are two bars of alloy steel recently purchased by a metalworking company. Both are the same type of alloy—AISI TS 4140 annealed. And both are high quality steels with chemistry meeting all the requirements of the specification.

But look at the difference revealed by hardenability tests!

The tempered-at-800° curves are typical. For the bar at left this curve starts at 44 Rockwell C and ends at 24. For the bar at right the same curve starts at 45—ends at 42. And the differences in hardenability naturally reflect equally marked differences in the mechanical properties that can be obtained from each bar.

Yet remember both bars are the same alloy and therefore are often expected to react in the same way. Their differences are only the normal variations that occur between different heats within the same specification.

That's why it is so important for you to specify and buy Ryerson Certified Alloys. *Every heat* of as-rolled and annealed alloy steel from Ryerson has been tested for hardenability in our own laboratory. When you receive a shipment of Ryerson alloys you also receive a Ryerson Alloy Certificate which shows exactly how *your particular heat of steel* responded to those tests. And the Certificate interprets the test results for you in terms of mechanical properties.

Thus you know the actual—not just the theoretical—hardenability of your alloy steel from Ryerson. And you know exactly how to heat treat that steel to obtain the desired properties. So why guess at hardenability? Use Certified Ryerson Alloys and be sure.

RYERSON STEELS

PRINCIPAL PRODUCTS: CARBON, ALLOY & STAINLESS STEELS—BARS; STRUCTURALS, PLATES, SHEETS, TUBING, MACHINERY & TOOLS, ETC.

RYERSON STEEL

JOSEPH T. RYERSON & SON, INC. PLANTS AT: NEW YORK • BOSTON • PHILADELPHIA • CINCINNATI • CLEVELAND • DETROIT
PITTSBURGH • BUFFALO • CHICAGO • MILWAUKEE • ST. LOUIS • LOS ANGELES • SAN FRANCISCO • SPOKANE • SEATTLE

1953 SELLING PRICES: *Cuts Coming if Hard Sell Fails*

3.1% expect over 10% increase
16.3% expect 5-10% increase
15.7% expect less than 5% increase

2.2% expect over 10% decrease
7.7% expect 5-10% decrease
8.0% expect less than 5% decrease

A check of 1152 businessmen reveals that they're giving increased attention to prices but that 82 per cent still expect them to hold or rise slightly in 1953

SELLING will be metalworking's top job in 1953, but price-cutting won't be widespread unless the task proves unexpectedly difficult.

STEEL's survey on the matter shows that less than 18 per cent of 1152 metalworking executives queried expect price drops on their products in 1953. Significantly, nearly 50 per cent see no change.

The Argument—If they have to talk price at all this year, most salesmen hope they can get by with pointing out that their products are holding the price line, despite still rising costs. Prospects are that we'll be subjected to widespread labor demands this year which will continue to push up the expense of manufacture. That will more than offset any decrease in the cost of materials. The Bureau of Labor Statistics' materials price gage (the wholesale index) has been dropping steadily since March, 1951, and now stands at about 110 per cent of the 1947-1949 average, only a little above the pre-Korean levels. But the BLS consumer index, which more readily reflects shifts in labor rates, is now more than 190 per cent of the 1935-1939 average. The pre-Korean average was less than 170. The problem that rising wages bring to the price structure is revealed in the castings industry which has just had to boost prices (see p. 38).

Practically all businessmen expect the old law of supply and demand, not the laws of OPS, to determine prices this year. Even with OPS still in effect, 70.7 per cent of the people surveyed say they currently are selling some of their products below ceiling. The effect of artificial curbs on prices will be even less when OPS expires.

Wait and See—Price barometers and market conditions will be watched with unusual care in coming months. "Let's put it this way," says William T. Mercier, secretary and chief engineer, Forged Tap Co., Pittsburgh. "We are going to watch the market and do whatever is necessary to avoid jeopardizing our own position."

Price cuts are coming spottily but more frequently now. Rapids-Standard Co., Grand Rapids, Mich., cut prices on its gravity conveyor 6 per cent. Lead and zinc quotations have been slipping, fell another half cent a pound last week. Polymer Corp., Reading, Pa., cut prices on its nylon rod up to 40 per cent. Average 1953 auto prices are down a shade from 1952. Hard-pressed dealers are shaving them still more by boosting trade-in valuations (see p. 52).

Where To Look—When significant price-cutting trends do come, they will probably first show up in consumer durables. The consumer durable goods people then put the pressure on suppliers, and the price-cutting trend could gain.

But there's no momentum that way now. Business looks good, and widespread price paring is rare in such times. Personal income after taxes is now at new peak of $242 billion yearly. Net personal savings are at an annual rate of $21 billion, not a record but still double what they were in the excellent year, 1948. In short, people have the money to buy, and there are more people to do the buying (158.1 mil-

lion now compared with 146.6 million in 1948. And contributing even more to industry's reluctance to cut prices is the profit situation. Corporate profits after taxes in 1952 were about $17.2 billion, compared with $20.7 billion in 1948.

When To Look — Industry will promote the "hard sell" in 1953, but price-cutting will be minimized as a tool for increased sales. First will come more advertising, better salesmanship, more quality, faster delivery, increased service. When the sag comes in the Ike hike to business spirits, watch for more action on prices. Economists are predicting some let-down will arrive in nine to twelve months.

Until then, any spot deflation that comes will be little more than a slow leak.

Founders Appraise Price-Hikes

OPS pass-through gives relief to founders, beset by rising materials, labor costs. Industry men now fear buyer resistance and cost increases yet to come

A TROUBLED INDUSTRY is relieved by over-all increases in ceiling prices, but time will tell if the pass-through is sufficient in view of continually-rising costs.

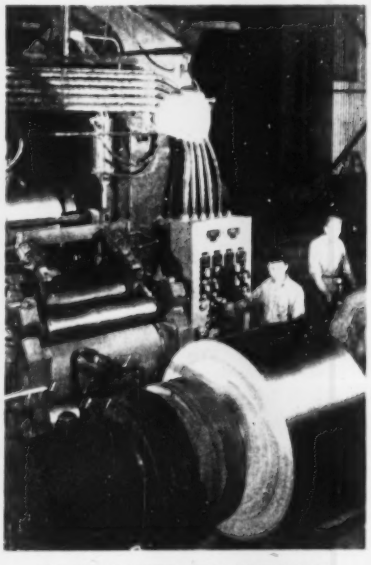
Malleable, gray iron and steel founders, confronted by spiraling material and labor expenses, received pass-throughs of from 5 to 9 per cent within the past six weeks. For the most part the increased cost is meeting slight opposition from buyers, but some foundry owners won't know until February whether the pass-through will completely succeed in passing through.

Satisfaction—Gray iron founders report general approval of a pass-through of 9 per cent received on Jan. 2, 1953. They add that extra cost of pig iron can be passed along, bringing the total increase to about 9.6 per cent. Donald Workman, executive vice president, Gray Iron Founders Society, says little resistance is being encountered to the price rise.

The gray iron founders' plight resulted largely from greater expense of supplies, notably manganese and sand, and costlier freight rates. Industry members are confident that the pass-through will fill the bulk of increased costs, although the full effect of the increase will not be felt for several weeks.

Accelerating Expenses — Malleable foundries blame increased cost of labor and materials for the necessity of a 6.2 per cent pass-through received on Dec. 19, 1952. Reaction is favorable to the price boost on the part of founders who hope raw materials costs stop rising. "The pass-through seems reasonably adequate and acceptable," remarks Lowell Ryan, managing director of Malleable Founders Society.

Steel founders are dubious of the value of a 5 per cent increase in ceiling prices received Jan. 2, 1953. They doubt that the price hikes will be sufficient after increased labor costs add to expenses for raw materials. The constantly rising price of labor affects costs all along the production line, causing headaches which a 5 per cent pass-through may not cure. Rising freight costs will complicate steel founders' problems and give them even more headaches.



HELPS KAISER SET RECORDS
. . . temper mill works strip steel coils

New Castings Pass-Through

A directive of the Office of Price Stabilization promises additional relief for manufacturers of castings. SR 4 to CPR 60, effective Jan. 23, allows an increase of 3½ per cent in ceiling prices on high alloy steel castings.

Amendment 7 to GOR 35, effective Jan. 26, allows pass-through of increased costs of steel, pig iron, copper and aluminum to customers who get materials from sources other than mill suppliers and warehouses, and who were not entitled to relief under original regulations.

Outline Management's Job

"Management's first job is to run a profitable enterprise. This is dependent on many things, with sound human relations the most important." So said Gwilym A. Price, president of Westinghouse Electric Corp., Pittsburgh, at the 337th meeting of the National Industrial Conference Board in New York.

The speaker outlined new functions of management beyond supervising manufacturing, finance and sales. Operations now include research, public relations, safety, training, planning and control. New problems face industry—government intervention, high taxes, national labor unions, fluctuation between wartime and peace and multiplied competition. The result has been to make business organization far more complex.

Other speakers emphasized importance of getting personnel policies in black and white, without frequent revision of those policies. They suggested four goals of industry: Identification with public service; economic welfare of the company; recognition of individual dignity in occupations; and preservation of free enterprise and representative government.

Kaiser Sets New Marks

Kaiser Steel Corp.'s Fontana, Calif., works set production records in 1952 by boosting steel ingot output to 1,384,060 net tons, 5 per cent more than in 1951 and by increasing output of pig iron by more than 6 per cent to 977,267 tons. An additional record was established in production of finished steel, which

reached 964,302 tons for the year.

A $65 million expansion program now in operation has included a ninth open hearth furnace which raised rated ingot capacity to 1,536,000 tons annually, an increase of 11 per cent. Meanwhile, production of iron ore in 1952 at Kaiser's Eagle Mountain, Calif., mines rose to 1,648,941 tons, nearly 25 per cent more than in 1951.

Kearney & Trecker Revamps

A 30 per cent productive capacity increase with a decrease of 15 per cent in floor space—that's a one-year achievement of Kearney & Trecker Corp.'s Walker-Turner Division, Plainfield, N. J.

A complete revamping of facilities added about 30,000 square feet to one plant while the company moved out of the building where it began production of light machine tools in 1930.

Kearney & Trecker, which relies on suppliers for a great number of components, has boosted its annual sales to the $6 million level. Some 40 per cent of current output goes to defense support.

Criminal Investigation Dropped

Grand jury authorization issued in January, 1952, for an investigation of the electronics industry was revoked by former Attorney General James P. McGranery before he left office. Mr. McGranery said evidence indicates that "whatever restraints may exist in the industry should more properly be the subject of civil litigation than of criminal prosecution."

He said that the investigation would continue, but not under criminal process.

Plan Group Management

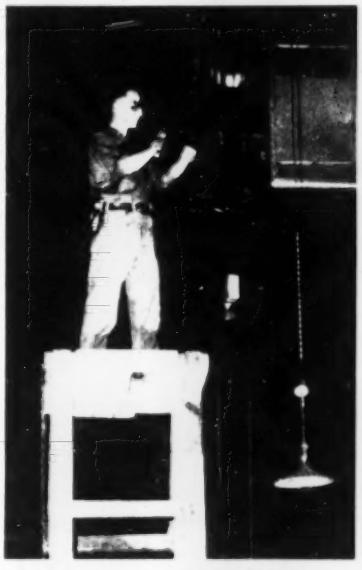
Junior executives are bringing their everyday contact with the problems of production, engineering and sales to bear on company policy under a group management plan at the Alloy Metal Wire Co. Inc., Prospect Park, Pa.

Members of the junior board of executives are chosen from shop foremen, plant superintendents, engineers, sales engineers, etc., making recommendations which are considered by the senior board of directors of the firm.

Modern Plant Upkeep: Aid to Profits

The old-man-with-a-broom maintenance man is being replaced by an efficient, mechanized operation. It's designed to minimize down time because of plant housekeeping

LAST YEAR, businessmen invested $26.9 billion in new plant and equipment. This year, they'll spend



PLANT MAINTENANCE MODERNIZES . . . *accounts for $17 billion yearly*

about $17 billion for upkeep on that and older facilities.

In fact, bills for housekeeping in industry may run from "8 to 15 per cent of each sales dollar," says H. E. Bliss, assistant controller, Lukens Steel Co. A large part of that bill will be to keep the production machines operating. The average machinery investment per worker was $8000 in 1950 compared with $2000 per worker in 1900. Current trends toward automation will continue to heighten the maintenance worker's importance to the production line.

Before the Breakdown — That's why management is becoming more interested each year in "controlled" maintenance and "productive" maintenance, which means figuring on what maintenance will be needed and doing it before production lines break down. It means the tools of maintenance must become more efficient, too.

At the state fair of plant maintenance, the Plant Maintenance Show in Cleveland, some 7000 diversified products were displayed last week for an estimated 15,000 visitors. Among the exhibitors were Tennessee Eastman Co., New York, which showed a transparent plastic tubing for compressed air message transmitters. The transparency permits quick inspection by a maintenance man when an obstruction occurs. Oster Mfg. Co., Cleveland, introduced a portable pipe threading machine which can thread all sizes of pipe from a quarter inch to 2 inches in diameter.

Cement Cut-up — Kollman Mfg. Co., Erie, Pa., showed a portable unit for opening clogged industrial or sanitary drains. Velocity Power Tool Co., Pittsburgh, introduced a pistol-type acetylene torch which is ignited and shut off by trigger action. Clipper Mfg. Co., Kansas City, Mo., demonstrated a saw with diamond blade capable of sawing concrete for the repair of concrete floors and for making openings for machine bases.

J. R. Sautter, assistant works engineer at the Chambers works, E. I. du Pont de Nemours & Co. Inc., Deep Water, N. J., said in one of the 16 formal conferences which ran concurrently with the show, "du Pont is saving $146,100 each year on just one (maintenance) item, in a single plant." By making a study of valve maintenance, the number of valves used was reduced from 42,650 to 22,700, with a yearly reduction from $304,500 to $158,400. The study cost only $3000, Mr. Sautter explained.

Growth of the maintenance show gives some evidence of the increasing interest in the field. Three years ago the first maintenance show covered less than 10,000 square feet this year the show covered 100,000 square feet in Cleveland's Public Auditorium.

Controls Repeal Demanded

"Stockholders of Joy Mfg. Co. should demand that the wage and price control program be abolished," the Pittsburgh company's

president, J. D. A. Morrow, declares. He explains that unequal application of government price fixing has penalized his company's earnings performance since early in 1951.

While wage rates and cost of supplies have advanced since adoption of the government's price stabilization program, prices of Joy Mfg. Co. products and maintenance parts have remained frozen, except for small pass-throughs of the cost of certain metals and raw materials.

The company's net earnings for the final quarter last year were equal to $1.27 a share, compared with earnings of $1.45 a share one year earlier. Shipments totaled $19,592,000, a drop from $19,897,000 in the corresponding quarter of 1951. Certain alloy steel shortages hampered shipments.

DMPA Aids New Project

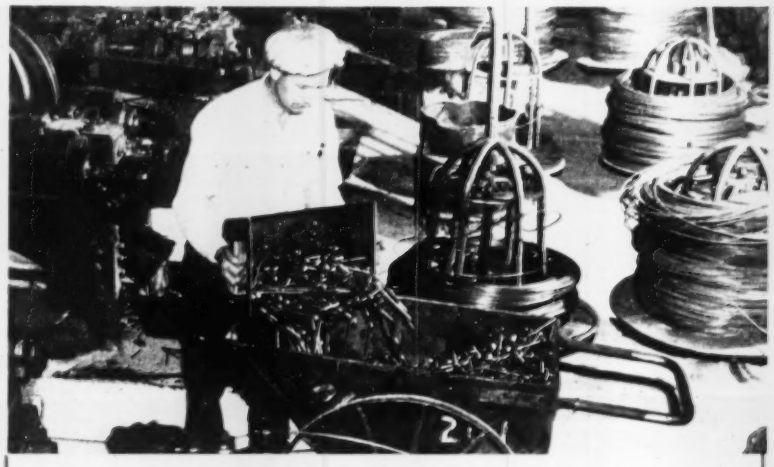
The Defense Materials Procurement Agency will underwrite development of an Oregon nickel deposit by two units of M. A. Hanna Co. Hanna Coal & Ore Corp. will develop the mine at its expense. Costs will be about $4.3 million. DMPA will advance Hanna Nickel Smelting Co. $24.8 million for a smelter which that company will operate at the project.

Hanna's subsidiaries will produce from 95 to 125 million pounds of nickel at the deposit, starting in 1954. DMPA will pay company expenses of about 79 cents a pound for the first five million pounds smelted and 60.5 cents a pound thereafter. The contract runs to June 30, 1962.

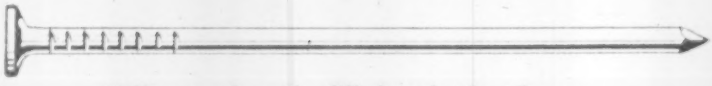
School for Management

An economics class for businessmen at Youngstown Sheet & Tube Co. has given diplomas to its first graduates—227 management employees. The class was made up of men ranging upwards from general foremen. Purpose is to teach workings of the American economic system.

The company hopes to send all supervisors to its Youngstown school, which was developed in cooperation with the University of Chicago.



NAILS APLENTY



Millions of nails fill hundreds of uses, but current demand trails production

FUTURE BATTLES will not be lost for want of a nail.

Supply exceeds demand, causing prices to wobble, although production of common wire nails is below capacity. In 1952, heavy nail production caught up with a peak postwar demand.

Common Wire Nails—Heaviest member of the nail family, in tonnage of production, is the common wire nail. Output in 1951 reached 16.8 million 100-pound kegs, but slumped to about 13 million kegs in 1952. Record production year was 1923 when 17,672,582 kegs went through die and heading equipment.

Production processes have changed little since the turn of the century, except for faster production and quicker die changes. Machines turn out upwards of 27,000 size 8d nails an hour. The wire nail industry is highly integrated, as five steel mills produce better than 80 per cent of total output. Some 300 independents have one or more nail-making machines. Leading size is the 8d, making up nearly 25 per cent of the total. Cement-coated nails comprise 14 per cent of production and galvanized nails reach nearly 11 per cent.

Cut Nails—Oldest of the nail family is the cut nail, whose production has dwindled from 8.2 million kegs in 1886 to a present level of about 600,000 kegs annually. This output requires 30,000 tons of slit sheets and plate, including tonnage for cut spikes.

Only three companies are now making cut nails, all by modern production processes. These are Alan Wood Steel Co., Conshohocken, Pa.; Wheeling Steel Co., Wheeling, W. Va., and Tremont Nail Co., Wareham, Mass., producers since 1819. Nailmaking machinery for cutting and heading nails from slit iron sheets came into use at Tremont in 1822. The new machinery turned out 10,000 nails in less time than 250 could be hand-hammered. A fairly steady market remains for cut nails, used in flooring and other wood connections where a blunt point reduces splintering.

Nail Specialties — Although there are several hundred special nails, less than a half dozen producers confine output to this group. Considerable amounts of nonferrous metals are used in nail specialties.

Employees Buy Company

Cleveland Pneumatic Tool goes to workers in unique deal involving $11.8 million

BEGINNING TOMORROW, Jan. 27, employees of Cleveland Pneumatic Tool Co., Cleveland, will own 100 per cent of their company as final arrangements for the sale are completed. Sixty Trust of Boston, present owners, and company officials evolved the plan, involving $11.8 million, over several months.

Stock will be divided between two profit sharing trusts representing workers subject to overtime pay and salaried employees, with the latter holding controlling interest of 51 per cent. That was stipulated by Sixty Trust to assure continuation of the present management.

Payoff—The overtime pay group, represented by the Cleveland Pneumatic Tool Co. Profit Sharing Trust, is scheduled to pay off the balance of its indebtedness in seven years. The salaried workers, represented by 77th Street Trust, will take 14 years. Employees approved the plan by unanimous action of the two committees they elected to represent them. Down payment was $2,150,000, paid from funds now in the trusts.

Sam S. Mullin, president, says that the plan is unique because it is the first time employee ownership has been tried by a major corporation. Cleveland Pneumatic Tool, which makes shock-absorbing aircraft landing gears, employs 2700 persons. Mr. Mullin estimates that business and earnings of the company will be good enough over the next 14 years to meet the payments easily. At present, the company has an order backlog of $90 million. He says that the transaction means simply that employees will be investing their profit sharing funds in their own company.

Improved Relations — Comments from all over the nation have been enthusiastic. Mr. Mullin says the plan "is a real attempt not merely to pay lip service to the theory that a man is entitled to share in the work that he does but to put that theory into practice."

In each of the past three years, the workers have shared through the profit sharing trust to the tune of 20 per cent of base earnings.

All figures estimated by STEEL for dollar sales of the commercial drop forging industry, excluding captive shops and heavy smith forging shops

No Drop in Drop Forging Dollar Sales

THE STEEL STRIKE left its stamp on drop forging business, making the steel shortage its number one headache in 1952. In fact, commercial drop forgers' delivery dates are just getting back to where they were seven months ago.

Despite the steel strike, defense stretch-outs and local labor troubles, commercial drop forgers' dollar sales rounded off at about $600 million for last year (see the chart). That's up $35 million from 1951. Tonnage-wise the industry lost some ground but hardly enough to be indicative of anything. In 1951, commercial drop forgers put the squeeze on 1,174,000 tons of forgings; in 1952, the total was about 1,160,000 tons.

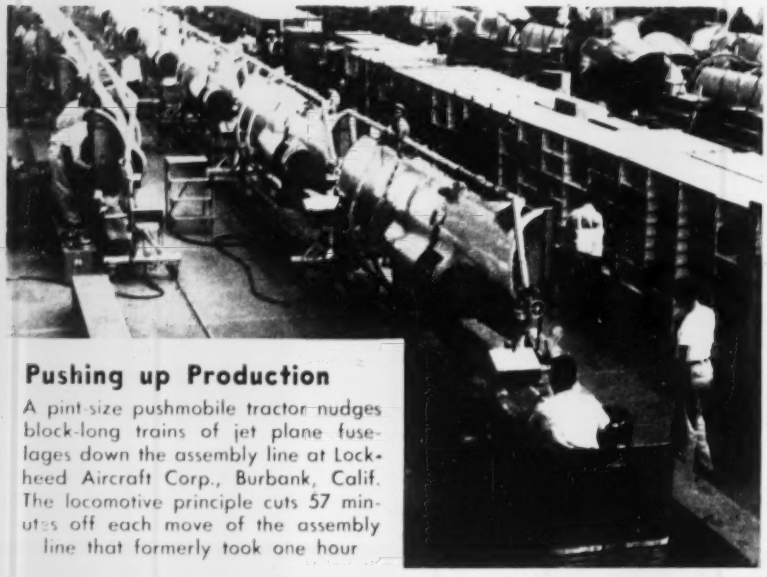
Little Help—Defense-rated business was some help to forgers' over-all sales pictures but the majority of the 125 commercial jobbing shops didn't have over 45 per cent of their volume in direct defense work. Counting defense-related orders, forgers on the average had 50 to 60 per cent in defense work last year.

There's still a lot of defense work "stretched out" on the order pad. A Pennsylvania drop forger's defense work history goes like this: Currently, defense contracts account for 10 per cent of the shop's total; high point in defense work came early in 1952 when it was 50 per cent, and unconfirmed orders on hand can eventually boost the defense load to at least 25 per cent of total volume again.

Behind Deliveries — Delivery dates currently are about 7 months for large forgings, 4 to 5 months for medium and smaller sizes and 5 months for alloy forgings, longer perhaps for larger sizes. At first glance those deliveries seem to be little improvement over the situation a year ago. But, at that time commercial shops were discouraging new orders, accepting only reorders. Now, new orders can get on the books, too.

Civilian business is confidently expected to take up any slack in defense ordering in 1953 if there's no large coal, steel or serious local labor strike. Peacetime buyers, like the automotive industry, agricultural equipment people, the aircraft industry and railroads, have been getting pushed off for over a year. One Cleveland drop forger said: "That doesn't mean we think the traffic will bear any across-the-board price increases. We look for a return to a buyers' market, and good business in 1953."

It won't be long, forgers believe, when they'll have to sit down with customers and work out a give-and-take deal on delivery and price. In the meantime, outlook for steel is slightly brighter for second quarter and warehouse stocks of forging stock are strengthening.



Pushing up Production

A pint-size pushmobile tractor nudges block-long trains of jet plane fuselages down the assembly line at Lockheed Aircraft Corp., Burbank, Calif. The locomotive principle cuts 57 minutes off each move of the assembly line that formerly took one hour

Defense Expansion Goals: Only Ten Are Unfilled

ROUNDING OUT its mobilization program, the Defense Production Administration says that ten defense expansion goals are still open to the metalworking industry.

You may obtain permission for rapid tax amortization on new or expanded facilities to produce: Batteries, "AA" type, dry cell; diesel locomotives; freight cars; gas utility pipelines; metal cans (tin conservation); scientific instruments; Great Lakes ore carriers; ocean going ore carriers; ocean going tankers and Inland Waterway vessels.

Where To Ask—Requests for information on these goals should be sent to the National Production Authority, New GAO Building, Washington 25. Applicants for certificates of necessity for tax amortization should bear in mind the government's policy on plant dispersion, says Ralph S. Trigg, DPA's acting administrator.

Since inception of the mobilization base program, DPA has filled 82 separate expansion goals. Another 101 goals are still incomplete, but pending and prospective applications for tax amortization are expected to fill these goals.

Enough Help? — "With a substantial portion of the established goals taken care of," Mr. Trigg asserts, "DPA is currently making an intensive study of all goals, as well as projected goals. This study is to determine the relative importance of established goals, to identify and remedy remaining bottlenecks and to determine if tax amortization and other current government aid are providing enough incentive for expansion of the required defense facilities."

Radiation Instruments Growing

Radiation instruments have grown from practically nothing into a $20-million industry in only six years, a survey by the Atomic Energy Commission shows. The industry was virtually nonexistent in 1946, and last year it employed more than 2400 persons.

Outside the AEC program radiation instruments are finding an expanding market. At present, military agencies provide about 50 per cent of the total market; the AEC and its principal contractors about 30 per cent, and the remaining 20 per cent is accounted for by private industry, universities, hospitals and research institutes, civil defense and export.

Seven companies with probable business volume in excess of $1 million each in 1952 account for about 50 per cent of the industry's activity.

Report Hits Discrimination

Observance of the non-discrimination clause in government contracts has been conspicuously absent—a neglect for which government procurement agencies, employers and labor unions all are to blame. That's the conclusion of the President's racial discrimination committee, of which Dwight R. D. Palmer, chairman, General Cable Corp., served as chairman.

Drastic remedies for this condition are recommended to the new Eisenhower administration, including court injuctions in cases of flagrant violations of the anti-discrimination clauses, and blacklisting of guilty contractors from doing further business with the government. The Labor Department, said the committee, can be designated as the agency to insure action on complaints of discriminatory practices.

Because of the committee's criticism, General Services Administration has put into operation a procedure to make effective the nondiscrimination clause in GSA contracts for supplies and services. At the same time, GSA requires the clause to be written into all appricable contracts.

Grinding Wheel Supply Good

Users of diamond grinding wheels now have a 60-day inventory, but supply and demand of such wheels are in delicate balance, manufacturers of the equipment told NPA. Intensification of the defense program could throw that balance way off, they agreed.

At present, consumption of diamond bort is exceeding imports, and inventories of the raw material are receding. But if conservation and salvage operations are

SELECTED DEFENSE CONTRACTS IN EXCESS OF $100,000

PRODUCT	CONTRACTOR
Lathes, Engine	Lehmann Machine Co., St. Louis
Mortar Shells, 60 mm	Line Material Co. Division, McGraw Electric Co., Milwaukee
Howitzer Parts, M-1	R. H. Bouligny Inc., Charlotte, N. C.
Aircraft Engine Parts	United Aircraft Corp., E. Hartford, Conn.
Aircraft Parts	General Electric Co., Schenectady, N. Y.
Automotive Parts	Hercules Motors Corp., Canton, O.
Engines for Fire Equipment	General Detroit Corp., Detroit
Pumps for Ships	Worthington Corp., Harrison, N. J.
	De Laval Steam Turbine Co., Trenton, N. J.
Air Compressors	Ingersoll-Rand Co., New York

practiced more rigidly this year, delivery of grinding wheels will be adequate. Such practices helped in 1953. For that reason, members of the industry urged that NPA Order M-103 be retained and enforced more stringently.

The diamond grinding wheel manufacturing industry used 9 million carats of diamonds in 1952.

Timken Sets Records

Production records were set at Timken Roller Bearing Co., Canton, O., in November, 1952, only to be broken in the following month. Vice President A. M. Donze announces that 242,000 finished bearings were produced for each working day in November and 250,000 for each day in December.

Plant officials say a considerable backlog of orders exists and production will continue at a high level this year.

Fast Write-off Total Climbs

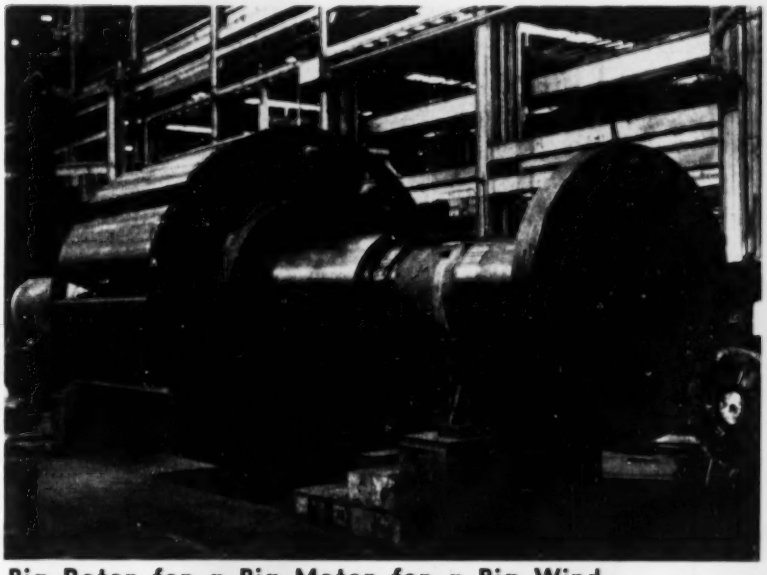
Defense Production Administration issued 266 certificates of necessity between Dec. 31, 1952, and Jan. 14, 1953, for new or expanded facilities amounting to over $213.6 million, including 117 small business projects worth over $97 million.

Three largest certificates are: Harvey Machine Co. Inc., Los Angeles, $65,250,000, 85 per cent allowed; T. H. Browning Steamship Co., Detroit, $18 million, 65 per cent allowed; Southern Indiana Gas Electric Co., Vanderburgh and Warrick counties, Ind., $10,443,500, 45 per cent allowed.

The latest list brings the total of projects approved for fast write-off to 15,280, worth over $24.3 billion.

Warehouses See Improvement

Copper and brass warehouses believe supplies are rapidly coming into balance with demand. Stock inventories of almost every product they carry are improving. Items in particularly short supply, in order of scarcity: Copper wire, bronze shafting, brass tube, brass wire, phosphor bronze products, Everdur in all shapes. Warehouse deliveries from suppliers for all items average 66 days. Sales ranged from fair in New England, the South and West to good in the East and Midwest.



Big Rotor for a Big Motor for a Big Wind

This huge 122-ton rotor, being built by Westinghouse Electric Corp., will be inserted in an 83,000-horsepower motor to form one of the world's largest rotating machines. Coupled with three other motors in tandem, the combined unit is slated to develop 216,000 horsepower for the Air Force's supersonic, transonic wind tunnels at Tullahoma, Tenn. The 127-foot rotor weighs 244,000 pounds

Edwin R. Motch Dies

Edwin R. Motch, 51, president, Motch & Merryweather Machinery Co., Cleveland, died Jan. 22.

CHECKLIST ON CONTROLS

Price Regulations

SCRAP—Amendment 12 of CPR 5, issued and effective Jan. 16, 1953, restates the definition of scrap broker and changes the basis of applying the $1.50-a-gross-ton deduction from shipping point ceiling prices for scrap where the purchaser is required to perform certain operations in moving the scrap.

IMPORTED STEEL — Supplementary Regulation 2 of CPR 31, issued Jan. 16, 1953, and effective Jan. 21, establishes specific dollars-and-cents markups of $15, $20 and $25 per ton for the different categories of imported steel commodities listed in CPR 31. It also sets percentage markups for warehousing imported steel which are in line with those already provided for domestic steel.

Controlled Materials Plan

CONSTRUCTION—Amendment of Jan. 21, 1953, of Appendix A of Direction 8 to CMP Regulation 6 permits self-authorization of a larger quantity of controlled materials for use in public road and highway construction. Amendment was effective Jan. 21.

MACHINE TOOLS—Amendment 1 of Schedule 1 of CMP Regulation 5, effective Jan. 22, 1953, adds metalworking machines priced at less than $1000 to the list of items for which MRO ratings may not be used to obtain delivery. It is designed primarily to assist manufacturers of small machine tools in reentering foreign markets which are being lost to European competitors as a result of operations of priority systems in the U. S.

Appointments in Washington

William L. Cressman, on loan from Armco Steel Corp., Middletown, O., was appointed director of the Iron & Steel Division, National Production Authority. Mr. Cressman has been deputy director of the division since October, 1952. William J. Stephens, assistant general manager of sales of Bethlehem Steel Co., Bethlehem, Pa., is the new deputy director.

Donald S. Parris, in government service since 1945, was named acting director of the Electronics Division, National Production Authority. Mr. Parris has been the division's deputy director for two years.

William J. Hoff was appointed assistant to the director for post-attack production planning, Office of Defense Mobilization. Mr. Hoff has held a similar position in the Defense Production Administration since July, 1952.

James C. Starks, of Sandia Corp., Albuquerque, N. Mex., was named executive director of the Research & Development Board's Committee on Atomic Energy.

E. T. Brown, of the Townsend Co., New Brighton, Pa., was named chief of the Bolt, Nut & Solid Rivet Section, General Components Division, National Production Authority.

L. Parker Fairlamb was appointed director of the Office of Materials & Equipment of the Small Defense Plants Administration. Mr. Fairlamb has been acting director since April, 1952.

Windows of Washington

By E. C. KREUTZBERG *Washington Editor*

NAVY SLASHES "BOILER PLATE" FROM CONTRACTS
. . . action could expedite industry's defense work

New Naval policy aims at speeding contract procedure. Statement of basic contract conditions would simplify dealings with government and cut "boiler-plate"

MILITARY CONTRACTORS will click their heels on learning that the Navy has found a way to eliminate complicated contracts. If the Navy succeeds, the other services might follow suit. Result would be to speed all armed services contract procedure.

New Navy policy calls for drafting a "basic agreement" with contractors. This agreement does not constitute a contract, explains Vice Admiral C. W. Fox, chief of naval material and administrator for the agreements. Instead, the agreement stipulates conditions which all contractors must fulfill in doing business with the Navy. Once the basic agreement has been executed, the only matters to be negotiated will be quantities, prices, specifications, delivery dates.

Cuts "Boiler-plate"—Such procedure eliminates the necessity of including in each contract all provisions required under the Armed Services Procurement Regulation, executive orders and statutes enacted by Congress. These conditions are covered by the basic agreement, thus making it unnecessary for the contractor to check many clauses in the "boiler-plate" pages.

The basic agreements are entered into with companies doing business with the Navy on a continuing basis. It is impracticable to arrange such agreements with occasional contractors. The first basic agreement was signed with the Hazeltine Electronics Corp., Little Neck, N. Y. Similar agreements are being negotiated with other Navy suppliers.

Metallurgy Slighted? . . .

If the National Science Foundation is advancing basic research in metallurgy, such contributions are omitted from the Foundation's annual report for fiscal 1952, newly released. A two-sentence reference mentions research in "high temperature physics, chemistry and metallurgy" in the field of "jet motors, rockets and guided missiles" but no particulars are given.

Although the report dwells on the insufficiency of congressional appropriation to finance all needed programs, scrutiny of 78 grants announced by the foundation for fiscal 1953 indicates that the chief interest is in encouraging basic research in astronomy, chemistry, earth sciences, biology, mathematics, engineering and physics. The 78 grants are evenly distributed over this list of categories.

Rousing Send-off . . .

Charles Sawyer, widely regarded as the ablest secretary of commerce since Herbert Hoover, was tendered a unique honor by the Business Advisory Council upon his retirement from the government. At a farewell dinner, a tray engraved with the signatures of 159 council members, and the words "in recognition of outstanding service to the Government and the Nation" and as a mark of the members' "personal affection and esteem" was given Mr. Sawyer.

Before leaving, Mr. Sawyer appointed John D. Biggers chairman of the council. Mr. Biggers is president of Libbey-Owens-Ford Glass Co., Toledo, O.

Coal Demand Forecasted . . .

Coal needs of electric utilities, coke ovens and steel mills in 1953 will outweigh declines in railroad and export requirements. The Defense Solid Fuels Administration predicts this in its forecast of bituminous demand for this year. Demand will rise 10-million tons above 1952 to 476-million tons of bituminous. The administration's forecast is 7-million tons under the demand predicted by Appalachian Coals Inc., marketers.

Orders for NPA Material . . .

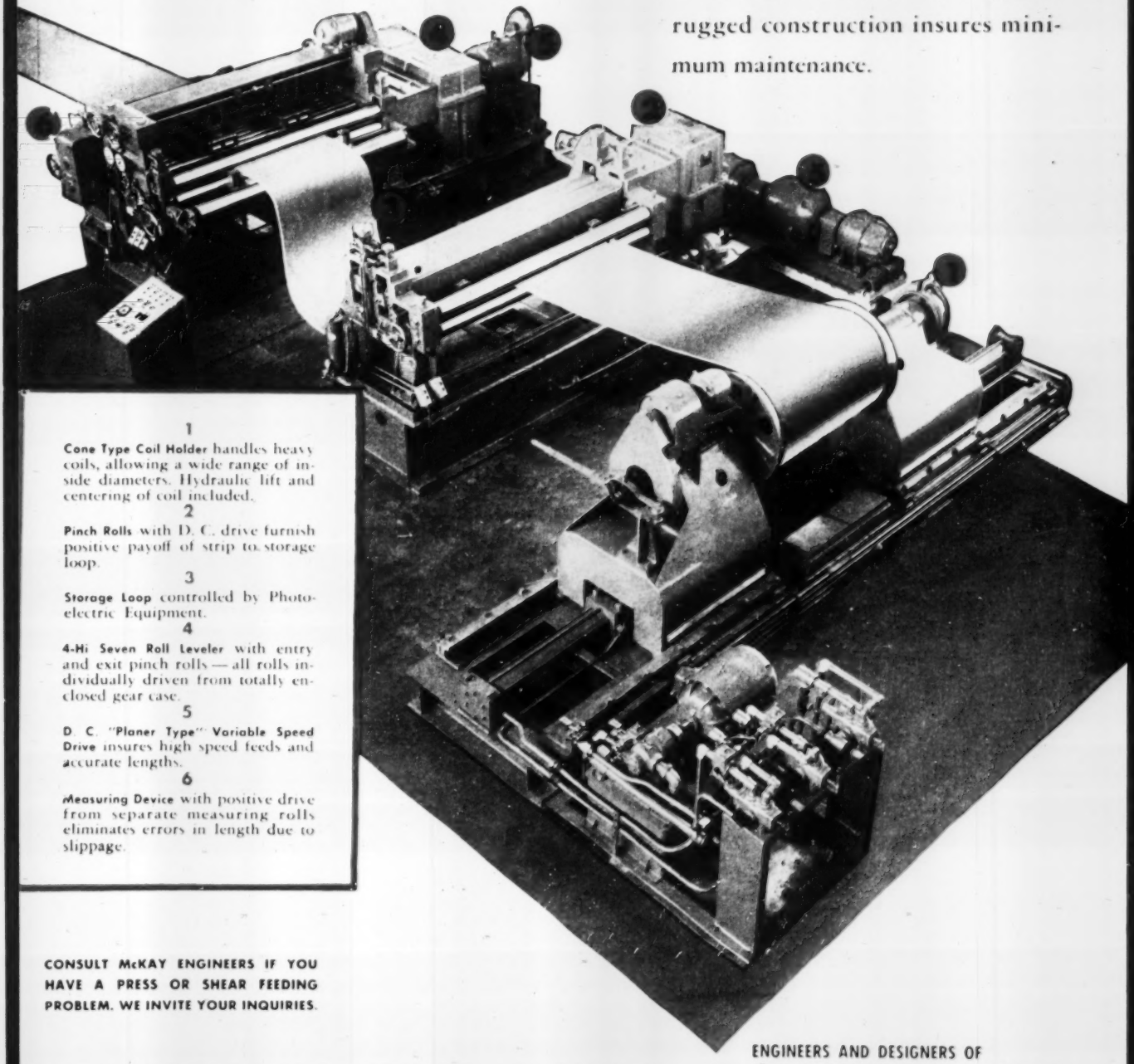
Sales copies of orders and other printed material issued by the National Production Authority no longer are available in quantity lots at NPA headquarters in the New GAO building, Washington, but are now obtainable in Room 6816 Commerce building. Single free copies of orders and releases will continue to be available from the Business Advisory Service reception desk, opposite Room 2512, New GAO building.

McKAY

PRESS FEED AND CUT-UP LINE

A New Answer to COIL FEEDING *Problems*

Incorporating the latest in D.C. drive and control, McKay's *new* feeding line provides high production with extreme accuracy. Typical rugged construction insures minimum maintenance.



1

Cone Type Coil Holder handles heavy coils, allowing a wide range of inside diameters. Hydraulic lift and centering of coil included.

2

Pinch Rolls with D. C. drive furnish positive payoff of strip to storage loop.

3

Storage Loop controlled by Photo-electric Equipment.

4

4-Hi Seven Roll Leveler with entry and exit pinch rolls — all rolls individually driven from totally enclosed gear case.

5

D. C. "Planer Type" Variable Speed Drive insures high speed feeds and accurate lengths.

6

Measuring Device with positive drive from separate measuring rolls eliminates errors in length due to slippage.

CONSULT McKAY ENGINEERS IF YOU HAVE A PRESS OR SHEAR FEEDING PROBLEM. WE INVITE YOUR INQUIRIES.

ENGINEERS AND DESIGNERS OF EQUIPMENT FOR THE AUTOMOTIVE, FABRICATING AND STEEL INDUSTRIES

McK

The **McKAY MACHINE** *Company*

YOUNGSTOWN, OHIO

Production Steel's Newest Modern ROLL and CUT LINE

Converts Coils to Sheets of Your Required Length in Jig Time!

This latest type equipment assures you *fast* service from Production Steel on de-coiling and cutting your coils to length in widths up to 80 inches and thicknesses up to .250. Production Steel also has the most modern facilities for all types of processing . . . pickling, roller leveling, annealing, shearing, slitting and skin rolling.

Custom STEEL STRIP

Fingertip QUALITY CONTROL

electronically operated, gives this 4-high, reversing type cold strip mill unusual flexibility in supplying cold rolled steel strip to your EXACT SPECIFICATIONS. Thicknesses .025 to .125 in all tempers, and in either bright or satin finish, are processed to your exact width in coil or cut lengths. Tempers ranging from dead soft to full hard, controlled by annealing and skin passing.

PRODUCTION STEEL

WAREHOUSES:

PRODUCTION STEEL COMPANY
20001 Sherwood Ave., Detroit 34, Mich.
Phone: TWinbrook 3-5000

PRODUCTION STEEL STRIP CORP.
20001 Sherwood Ave., Detroit 34, Mich.
Phone: TWinbrook 3-5000

PRODUCTION STEEL COIL, INC.
20001 Sherwood Ave., Detroit 34, Mich.
Phone: TWinbrook 3-5000

PRODUCTION STEEL CO. OF ILLINOIS
2801 Roosevelt Rd., Broadview, Ill. (Chicago)
Phone: MAnsfield 6-4242

SENECA STEEL SERVICE, INC.
1050 Military Rd., Buffalo 17, N. Y.
Phone: Riverside 7920

SALES OFFICES:

PRODUCTION STEEL COMPANY
1002 E. 81st Street, Indianapolis, Ind.
Phone: Broadway 3408
E. W. Richardson, Sales Representative

PRODUCTION STEEL COMPANY
548 W. Mechanic Street, Jackson, Mich.
Phone: 2-9097
Glenn Christman, Sales Representative

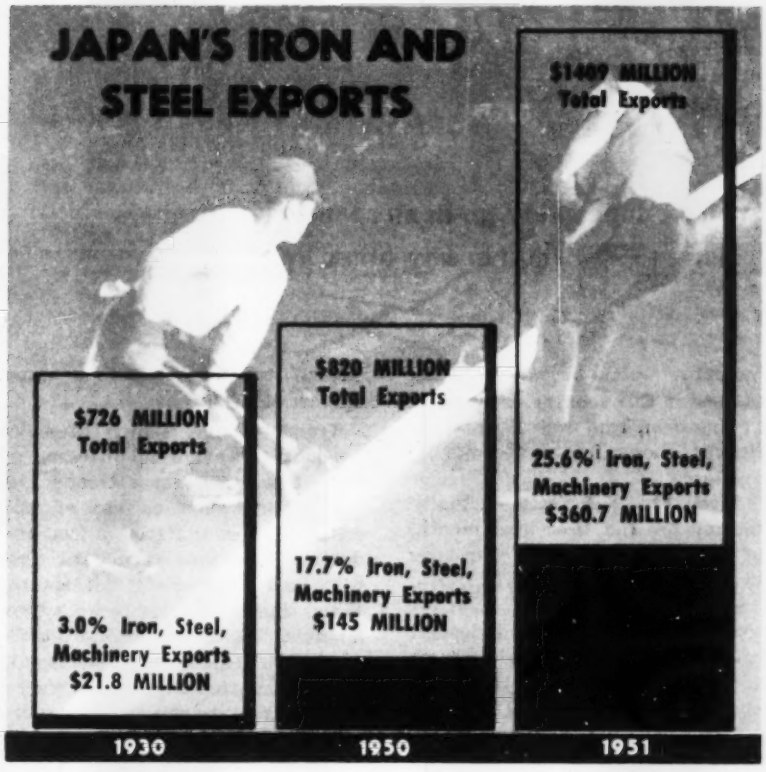
PRODUCTION STEEL CO. OF ILLINOIS
5226 N. Bay Ridge Ave., Milwaukee, Wisc.
Phone: WOodruff 2-1206
H. Clive Morrison, Sales Representative

SENECA STEEL SERVICE, INC.
739 Westchester Ave., Rochester, N. Y.
Phone: Culver 7480
W. J. Knoll, Sales Representative

SENECA STEEL SERVICE, INC.
1347 Northcliffe Rd., Syracuse, N. Y.
Phone: 73-5722
Dean Hethington, Sales Representative

SENECA STEEL SERVICE, INC.
347 Price Street, Jamestown, N. Y.
Phone: 5759
S. N. Olmsted, Jr., Sales Representative

PRODUCTION STEEL COMPANY
1040 High View Lane, Green Bay, Wisc.
Phone: Howard 7407
Tony Canadeo, Sales Representative


JAPAN'S IRON AND STEEL EXPORTS
$726 MILLION Total Exports
3.0% Iron, Steel, Machinery Exports $21.8 MILLION
$820 MILLION Total Exports
17.7% Iron, Steel, Machinery Exports $145 MILLION
$1409 MILLION Total Exports
25.6% Iron, Steel, Machinery Exports $360.7 MILLION
1930
1950
1951

Japan: Metal Exports Take Bigger Bite

Shipments of iron and steel products accounted for one-fourth the total Japanese exports in 1951. The world market situation helps push the percentage upward

SHIPMENT of 27,500 tons of steel products in 1947 to the U.S. reopened Japanese metal exports after World War II. Those and other metalworking exports continued to take bigger shares of total Japanese exports up to 1951, the latest year on which figures are available, when iron, steel and machinery exports accounted for one out of every four export sales dollars (see the chart).

That post-World War II march to metalworking exports in Japan is based on: Relatively lower exports of iron and steel from Western Europe has turned more demand to Japan; a continuing lag of supply below demand in world markets and the preference of Japanese iron and steel makers for export sales to get immediate cash for their product, not always possible in domestic sales.

Japan Explained — These and other subjects are discussed in a new booklet *Japan's Iron & Steel Industry, 1952*, published by the Tokyo Liaison & Translation Service, which is aimed at "describing the characteristics and trends of the Japanese iron and steel industry" to foreigners. The booklet also touches on related industries, such as raw materials suppliers and end product manufacturers. There's an appendix of sizes of ordinary finished steel products by Japanese makers, too.

Japan's Iron & Steel Industry is available for $3.00 from the Tokyo liaison & Translation Service, 7, 2-Chome, Yurakucho, Chiyodaku, Tokyo, Japan.

Record U.S. Exports in '53?

"If we can make deliveries, and if more American firms sell overseas, exports in 1953 should hit an all-time high because the need and demand is there."

So says Ralph M. Kovel, president, Case International Co., Cleveland, one of Ohio's largest general import-export firms.

"The need for American-made goods is as great as ever in Europe and South America. But, because of slow delivery on many items, we are losing out to some foreign manufacturers. This is doubly hard to take because we are losing out to inferior merchandise. Other than specific items, America as a whole is losing business because its firms are not conscious of the tremendous world markets. There are many case histories on record of U. S. companies which have skyrocketed sales by allocating a portion of their output to the markets abroad."

Mr. Kovel concluded that imports would also be high in 1953 because "in many countries, governments are allocating scarce materials for use in exported goods only. The quality of foreign-made products is in most instances high; in Japan, the quality exceeds prewar level.

"U. S. industry has now had a chance to test imported machine tools and other equipment and, in the light of their performance, is now ready for reorders."

Loans To Bolster Metals Supply

Loans by the Export-Import Bank of Washington for development of sources of strategic materials accounted for more than half of its loan commitments made in 1952, $314.2 million out of $596.6 million. Herbert E. Gaston, chairman of the bank, says there are a substantial number of additional loans for mining and transportation, power plants and port facilities in Africa under consideration.

Mr. Gaston's statement follows closely the announcement by the E&I Bank that it has given the Republic of Portugal a $17-million credit to be used in construction of a railway from the Rhodesias to the port of Lauzenco Marques in Mozambique.

Significance of that: The railway will provide an alternate and an added means of getting copper, cobalt and chrome out of North and South Rhodesia. Most of these materials go to the United States and other friendly nations.

Filled to the Brim . . .

More things may go in more metal containers during 1953 than in any other year

MORE STEEL will go into containers this year than last and possibly more than in any other year on record.

That view is predicated on the likelihood of continued strong demand for containers and something not true in 1952 sufficient steel to meet the demand.

Demand Is Good—Steel container applications have been steadily broadening. With an adequate supply of steel, the industry believes even a leveling off or a moderate recession in business conditions generally this year is not likely to preclude some gain in the container industry—if for no other reason than that an alert technical and commercial research has generated a great momentum.

Uptrend over the past five years in steel shipments to the container industry, fourth largest consumer of steel in this country, is reflected in American Iron & Steel Institute figures, shown in the accompanying table.

Steel Strike Effects—Actually, figures for the first nine months of 1952 show a slight gain over the corresponding period of 1951—2,985,077 tons, against 2,931,776 tons. However, some trade leaders believe that when final returns are in it may be found that overall consumption of steel for canmaking was off, as major effects of the steel strike did not show up until the final quarter.

Of the 2,985,077 tons of steel consumed in the manufacture of cans during the first nine months, 2,004,010 tons went into food cans, against 2,007,596 tons in the same period of 1951, and 981,067 tons into non-food cans, against 924,180 tons.

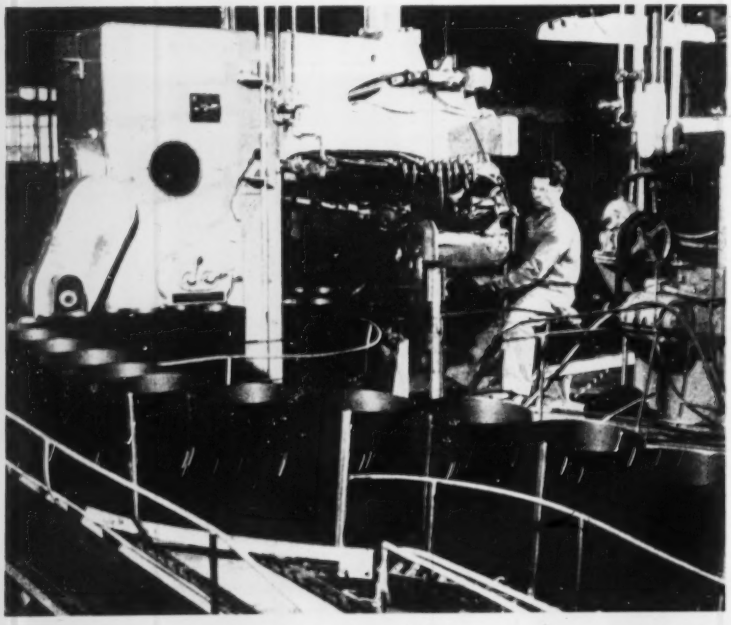
Trends—While leading canmakers look for a normal increase in sales this year, some trends are noteworthy, such as use of all-metal cans in the frozen food industry to replace cardboard cartons and fibre body containers. When this trend first became pronounced in 1951, 6-million cans of frozen foods were packaged. Demand spurted rapidly last year; further gains are expected this year.

Demand for cans for auto accessories and supplies has increased to a point where now around 2,250,000,000 cans are being used annually for about 30 different products. Valve type metal containers for various products dispersed by pressure methods from the container have opened up new fields of application. Demand for beer cans continues strong, this type consuming 40,917 tons of tin plate in 1944 and 492,049 tons in 1950. The tonnage promises to be even higher in 1953.

Greater Capacity — Meanwhile, facilities for producing tin mill products have increased steadily. Unofficial estimates place capacity at more than 6.5-million tons, with the emphasis still on electrolytic plate. Currently, close to 60 per cent of the tin plate produced is said to be this type. Some believe that the ratio of electrolytic plate to hot-dipped will reach 70-30 before stabilizing.

Continuous tinning by the electrolytic process began in 1937; by around the beginning of last year there were 30 electrolytic tinning lines capable of producing 3.5-million tons of electrolytic plate (0.50 pound grade). Since then three more lines have been added, with more facilities under construction.

Changing Ratios—As the pro-



A rapidly growing segment of the container industry is that which turns out the larger shipping units. Here's a shell welding machine in action

SHIPMENTS OF STEEL TO THE CONTAINER INDUSTRY

(Net Tons)

	9 mos. 1952	1951	1950	1949	1948
Cans—Sanitary	1,721,468	2,583,749	2,477,617	1,893,099	2,131,669
Cans—General line	1,046,090	1,536,743	1,528,667	1,229,124	1,361,281
Crown caps and other closures	205,553	356,653	332,217	231,293	217,590
Steel barrels and drums 19 gage and heavier	400,958	782,602	590,115	611,840	653,288
Steel barrels and drums Lighter than 19 gage	133,168	276,522	221,040	158,142	229,995
Shipping pails	87,754	186,957	114,118	86,487	85,631
Compressed gas cylinders	60,383	93,674	97,154	78,666	129,145
Cooperage, boxes, strapping and all others	353,713	707,054	550,236	366,984	493,774
GRAND TOTAL	4,009,087	6,523,954	5,911,164	4,655,635	5,302,373

portion of electrolytic plate production has increased, the ratio of tin to tin plate has decreased, because of the thinner and more uniform coatings that can be applied by the electrolytic method. However, despite lighter coatings, application of electrolytic tin plate has continued to expand, as further refinements are made in the product.

It is now satisfactory for the majority of vegetable products, although high acid products and a limited quantity of vegetables are still packed in hot dipped tin plate cans. Meanwhile, extensive research is going on toward the use of high coating weight electrolytic tin plate to further replace some present hot-dipped applications.

Rising Fast—Manufacturers of steel barrels and drums and shipping pails, who represent an increasingly important segment of the container industry, anticipate good business this year, but will keep a close eye on carloadings, a key index.

A quick glance at the development of the shipping container industry since it was established early in the present century, reveals it was producing 2.4-million drums of all types by 1922 and then, expanding by leaps and bounds, was turning out 111,734,000 units annually by 1951.

New Strength—Today the annual capacity of the industry is estimated at 177.5-million units—52.5-million heavy drums, 15-million light drums and 110-million packages and pails. About 45 companies, with 60 plants, make drums or drums and pails, and 25 others make only shipping pails.

Indicative of the distribution of shipping containers are figures below from the Department of Commerce and the Steel Shipping Container Institute, showing purchases of drums and pails by industries for 1951, the last year for which full statistics are available:

	Drums, 18 gauge and heavier	Drums, 19 gauge and lighter	Drums, 20 gauge and lighter
Food	6.34%	1.63%	3.04%
Petroleum	52.39	50.36	28.78
Chemical	21.93	24.43	13.74
Paint and Varnish	4.56	3.04	31.09
Other	4.06	18.61	20.72
Armed Services Direct	10.72	1.93	2.63

War Activities—In times of war the shipping container industry normally makes additional products requiring other equipment: 5-gallon blitz cans; powder shipping containers (various types); ammunition shipping boxes (40-mm, etc.); flare bombs; parachute containers; practice bombs; aircraft engine cases; multiple bomb containers (aerial); precision instrument rustproof containers; army and navy type rockets; and miscellaneous, special type metal packages.

Stimulating growth has been the development of automatic machinery which has increased the rate of production from 25 to 50 drums per hour back in the hand-operated machinery days to as high as 600 at present, thus making it possible to produce those units at well below the average advance in general commodity prices. Also contributing greatly has been research, especially with regard to protective coating.

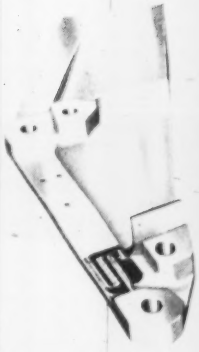
Development—Latest major step is a broad and continuing program of research and development at the Battelle Memorial Institute, Columbus, O., sponsored by Steel Shipping Containers Institute.

One direct result of this research was the discovery of formula Synthetasine 100, which has considerably broadened the field of products to be successfully shipped in lined steel containers. Studies show Synthetasine 100 chemically resistant to alkali, dilute mineral acids, chlorinated solvents, formaldehyde (36-38 per cent aqueous), detergents, detergents combined with hydrocarbon solvent, fatty acid, emulsions.

Economy—Most steel shipping containers are reused many times. For reconditioning these containers there is an organized reconditioning industry, comprising more than 250 companies throughout the country. A number of buyers of new drums have facilities for repairing and reconditioning them. About 60-million steel drums are reconditioned annually at a saving of about 1.8-million tons of sheets.

The trends and developments in containers of all types led one executive to say this about his industry: "In 1953 there will probably be more things in more kinds of metal containers than ever before in history."

where *Precision* counts

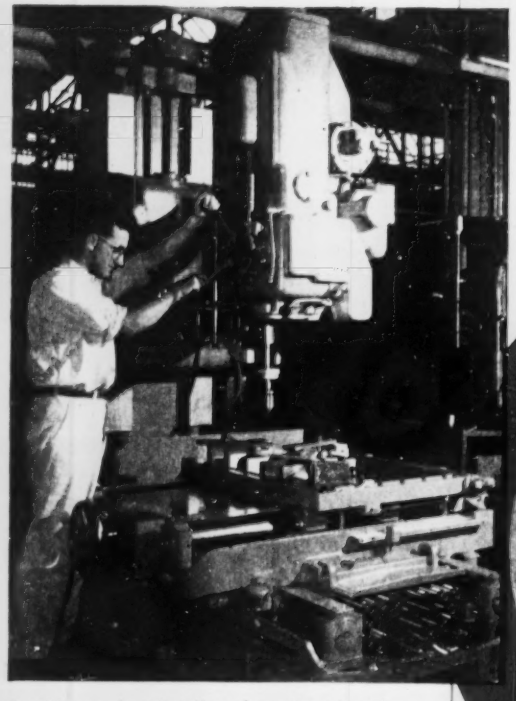


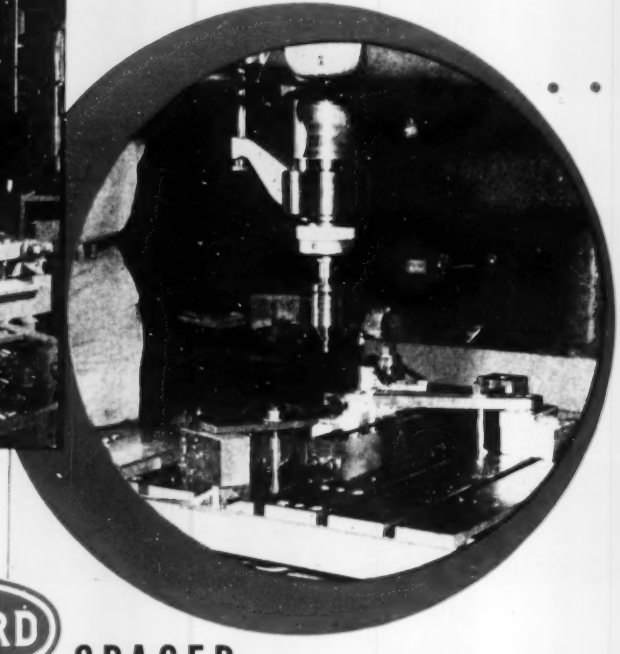
a natural combination hard to beat . . .

Bullard 30 x 20 Spacing Table installed on Cincinnati-Bickford fixed arm Precision Drilling Machine at Convair (Consolidated Vultee Aircraft Corporation, San Diego, California) is proving that these two units "pay-off" in elimination of jig cost, speeding-up production and accuracy in repetitive drilling on a variety of work.

A new job goes into immediate production with no lost time — no waiting for preparation of jigs.

Simple and comparatively fast change-over from one job to another minimizes production tie-ups.





Precision work materially reduces if not entirely eliminating spoilage and provides complete interchangeability of parts.

BULLARD SPACER

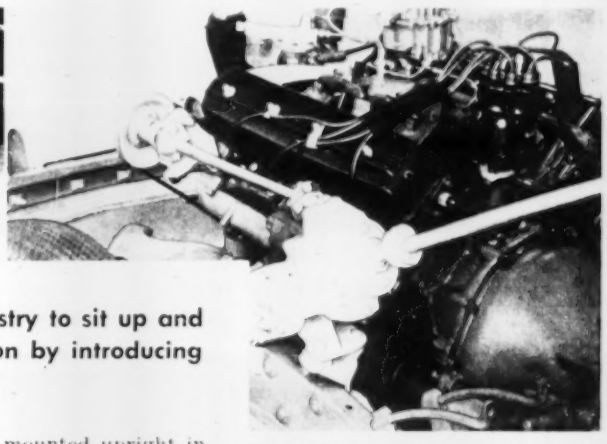
Ask for information on Precision Drilling without Jigs

. . . THE BULLARD COMPANY . . . .

BRIDGEPORT 2 • CONNECTICUT

By H. C. TUTTLE *Detroit Editor*

Mirrors of Motordom



Studebaker is forcing the rest of the industry to sit up and take notice as it duplicates its 1946 action by introducing models with markedly different styling

DETROIT

"THE automobile industry is weighing the probable ultimate effects of the introduction by Studebaker of its new models which feature sharp breaks in styling. . . ." These words written in this column almost seven years ago are again *apropos*. The "which-way-is-it-going" car that Studebaker brought out in May, 1946, was the butt of countless jokes but its ultimate effects on the industry's styling thought have certainly been considerable.

Controversial—The South Bend producer's new offering is, if nothing else, controversial. As it has in several postwar models, Studebaker again shows a willingness to be unconventional in the design of its production cars.

Designer Raymond Loewy and Studebaker Corp. broke with a great many traditions to work out the lines of the ultra-sporty hardtop and five-passenger coupe. These are the two models in which the "new look" is most pronounced. In these the over-all height of 56-5/16 in. is several inches lower than any other American production automobile. Length has been increased almost five inches. The trunk and hood lines are also lower and longer. Whereas other car makers are raising their trunk lids and then covering the hump with higher fenders, Studebaker takes a calculated risk on the amount of trunk space the average owner really demands and slims the trunk down to the point where the spare tire cannot be mounted upright in it but must lie horizontally.

Against the Trend — It deliberately reveals more of the rear wheels when other cars experimentals excluded — tend to cover them as fully as possible. With other car makers boasting of greater seat widths, Studebaker robs the rear seat of some of its space by affixing a center arm rest. This is made necessary by the dropped floor in the passenger compartment to get sufficient headroom for the rear seat passengers, and by the much higher bulge of the drive shaft tunnel.

In its departure from the massive front end appearance sought by many makers, Studebaker's styling is most daring. The sharply forward sloping hood and the deemphasized grille openings will be among the most discussed features of the new cars. And whereas other car makers have stepped up their application of chrome to body and fender panels, Studebaker uses none as side trimming but is liberal with it for window reveals and along the top of the rear fender. Bumpers are closely integrated with the body and are relatively narrow.

The Exception—Sedan models are somewhat more conventional. Many of the same line changes have been made as with the coupes but to a lesser degree. Larger windows, including a one-piece, wrap-around rear window, increase glass use a third over last year.

Most of the engineering changes are minor. The six cylinder and V-8 engines are mounted somewhat differently and carburetors have been redesigned to fit under the lower hood.

Power Steering—The big engineering news, however, is the development, with Borg-Warner Corp., of a mechanical power steering device. Heretofore, power steering has been hydraulically actuated and major problems have been oil pump noise, complexity of the "plumbing," and bulk and expense of the units. The mechanical power steering system for Studebaker consists of a power unit, steering shaft-mounted, a power input shaft and a pulley assembly which takes power by V-belt from the engine. The power unit, enclosing a gear train and two opposite-rotating multiple disc clutches, measures only six inches square and weighs only 22 pounds. Weight of some of the hydraulic

Studebaker Style, Steering

Studebaker manages a slinky "European" look in the 1953 models just released. Particularly noticeable are the long downsweeping hood and dished wheel covers. The Borg-Warner power steering unit, right, optional on 1953 models, is driven directly from the engine by a V-belt and auxiliary shaft. It aids steering through two multiple disk, counter rotating clutch assemblies. Power steering is currently offered on the Commander and Land Cruiser and will be available for Champions later this year

(Material in this department is protected by copyright and its use in any form without permission is prohibited)

devices amounts to approximately 60 pounds.

As long as the engine is running, the ring gears in the power unit also revolve. A turn of the steering wheel brings either the upper or lower ring gear and clutch into contact with the steering gear and transfers engine power to the steering gear. The reduction in steering effort is calculated to be 75 per cent less. The power boost comes only when force applied at the steering wheel exceeds two pounds. Initially available only on Commanders and Land Cruisers the unit will be offered later this year on Studebaker's Champion models.

A Gamble — Studebaker whose percentage of convertible production has been higher than its percentage of industry production risks that segment of the market entirely by leaving a convertible out of its 1953 line-up. Such a body type can be reinstated if the dealers report would-be-purchaser disappointment, but the thinking is that convertible fanciers will be well satisfied with the sportiness of the new coupes. Studebaker people also discussed advisability of entering into station wagon production but decided against it, as a matter of policy, at least for the time being.

Price changes for the most part are minor, from a few cents to a few dollars. The five-inch longer five passenger coupes are up $10-12 from last year's models but the hard-tops have been reduced $98 in the Champion series and $106 in the Commander line.

Because of Competition—These are some of the reasons why Harold S. Vance, Studebaker president and board chairman, believes his company is ready for "normal competition", and why he thinks Studebaker can cut a larger share of the industry's sales for itself. Studebaker's bigger slice, he feels, "will need to come from those producers in the industry who already have the larger volume". Other observers, who think the Studebaker gamble will have a big payoff in the dealer showrooms, take a somewhat different view. They think 1953 may squeeze some of the other independents pretty badly while being rough on only one of the big three.

Auto, Truck Output

U. S. and Canada

	1952	1951
January	409,406	645,688
February	467,691	658,918
March	517,207	792,550
April	576,505	680,281
May	546,673	695,898
June	560,947	653,682
July	246,461	522,858
August	293,722	571,442
September	592,253	505,758
October	645,862	558,971
November	550,885	480,323
December	568,577*	402,729
Total	5,976,189	7,179,161
Week Ended	1952	1951
Dec. 27	102,558	39,488
	1953	1952
Jan. 3	106,102	53,601
Jan. 10	139,620	92,741
Jan. 17	148,718	98,669
Jan. 24	149,000*	94,722

Sources: Automotive Manufacturers Association, Ward's Automotive Reports. *Preliminary.

GM Motorama: Lavish Salesman

General Motors Corp. pulled all the sales and promotional stops at its Motorama in New York's Waldorf-Astoria because it's betting there will be a virtual end to all restrictions on auto production by Apr. 1.

Most eye-catching of the GM products on display were the reinforced plastic cars. None of them is likely to be built in any significant quantities for commercial purposes, but if any is, the body will probably be turned out in steel instead of plastic. Another eye-catcher was the four-door, hardtop Cadillac sedan without door pillars built for C. E. Wilson. The styling might enjoy good acceptance as a new body series in the Cadillac line.

In February when the Motorama moves to Miami, Fla., where more room will be available, the show will be much heavier on research and engineering exhibits. The mock-up of GM's power steering drew crowds in New York.

Price Cutting Mounts

Anxiety in some dealerships is being expressed in a traditional way—price cutting. A sales slump has overtaken some of the new models in an alarming fashion, and dealers in other makes are not as happy as might be expected over this development. A competitor down the street who is giving high allowances for the trade-in or who is knocking $200-300 or more off his list prices puts the public in a bargain-driving mood.

For some of the companies whose new products have caught on well and who are trying to add dealerships, the situation is advantageous, however, and the dealer and factory bodies are watching closely. Dealer pressure on one company has become intense, and one of several courses appear open to it: Bring down list prices appreciably so that the dealer margin is no longer in such a squeeze, bring out new models quickly, or put some of the engineering "shelf goods" now tagged "for future use" into production right away to boost sales.

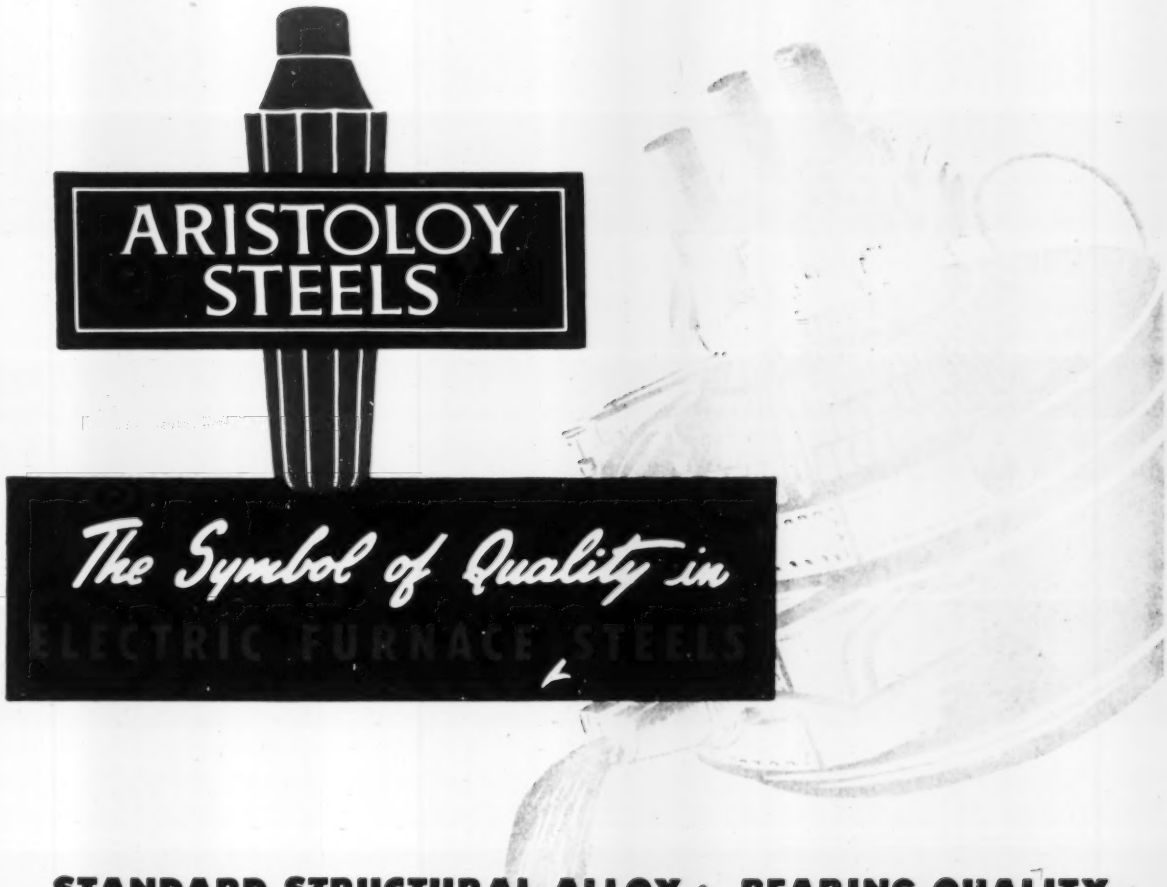
Heavy Sales for Auto Parts

Intense activity for the automotive parts and accessory industry will continue through 1953, General Motors Corp. officials say. Contributing factors will be normal automotive replacement parts inventories and more vehicles between five and ten years of age on the road.

Sales trends are continuing upward in the AC Spark Plug division of General Motors, after setting a record in 1952. Employment is steadily rising, but GM spokesmen say a critical shortage still exists of men in engineering and technical fields.

Motordom Murmurs

A torque converter automatic transmission is understood scheduled for release to production in March by Plymouth Division. Cadillac in 1954 models reportedly will have major body changes, including "step-down" floor design for lower height . . . Ford's new overhead valve V-8 engine will be in production soon enough to have mid-year introduction if competitive conditions call for it . . . Dodge will put its V-8 engine in trucks this year . . . More business is in store for custom body builders with the progressive widening of Packard's luxury line . . . Hudson's "jet" compact car in the popular price class will be introduced next month.



STANDARD STRUCTURAL ALLOY • BEARING QUALITY • ALLOY TOOL • SPECIALTY • NITRALLOY • CARBON TOOL • AIRCRAFT QUALITY

Hot Rolled • Forged • Annealed • Heat Treated • Normalized
Straightened • Cold Drawn • Machine Turned • Centerless Ground

IT'S BETTER TO USE THE BEST!

COPPERWELD STEEL COMPANY
WARREN, OHIO

117 Liberty Street
New York, New York

176 W. Adams Street
Chicago, Illinois

P. O. Box 1633
Tulsa, Oklahoma

1578 Union Commerce Building
Cleveland, Ohio

7251 General Motors Building
Detroit, Michigan

325 W. 17th Street
Los Angeles 15, California

1140 Lockwood Drive
Houston 20, Texas

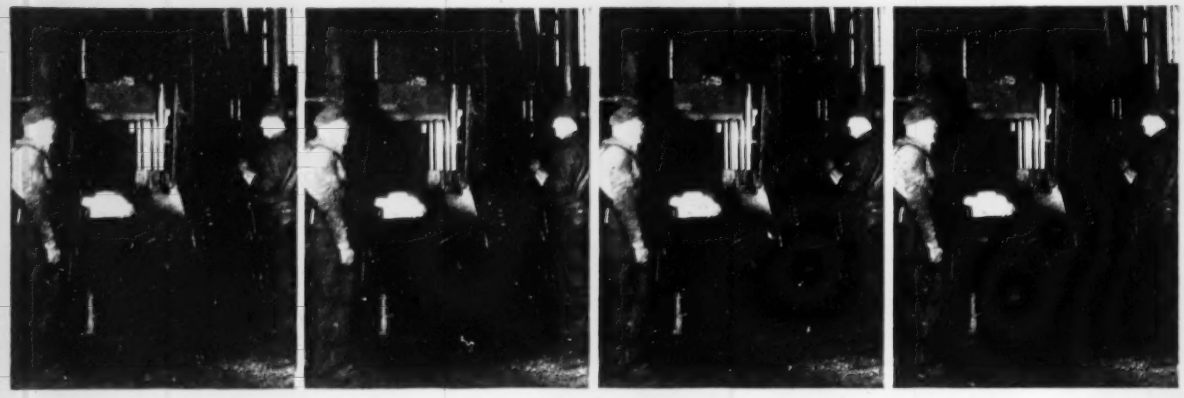
803 Loew Bldg.
Syracuse, New York

528 Fisher Building
Detroit, Michigan

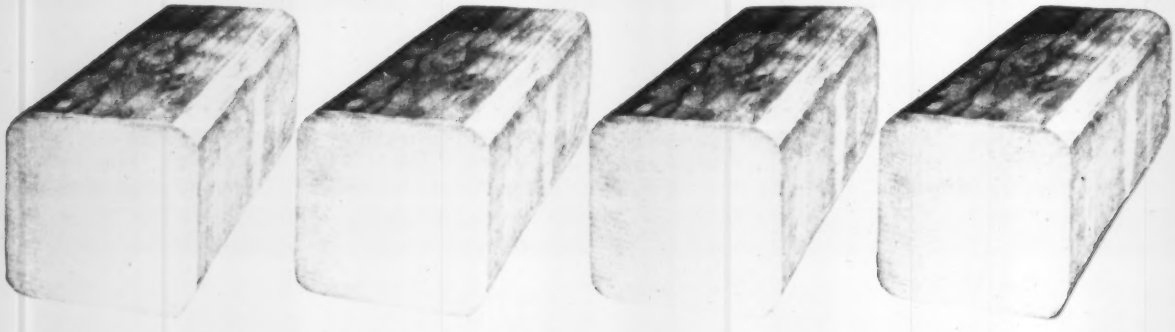
3104 Smith Tower
Seattle, Washington

Monadnock Building
San Francisco 5, California

To get uniform forgings here...



start with uniform TIMKEN® forging steels!

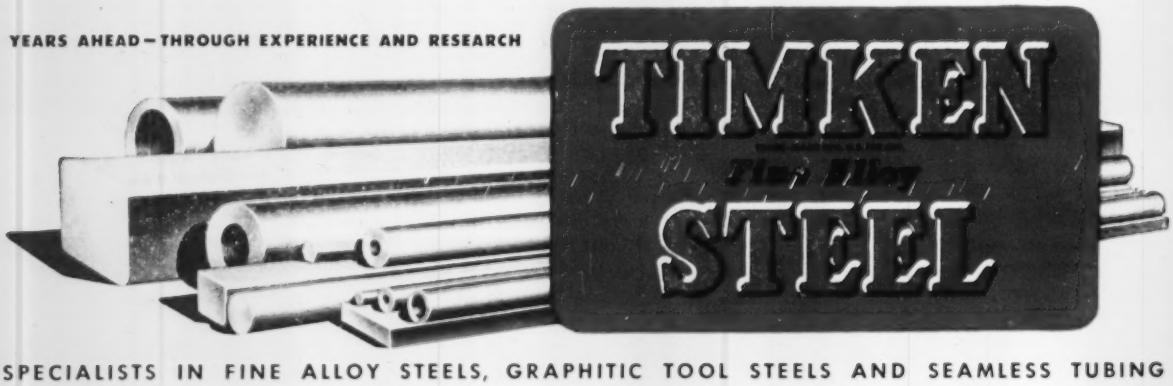


YOU can get uniform, high quality forgings and cut production costs too if you start by using uniform, high quality Timken® forging steels. With Timken forging steels, you're assured of uniform forgeability, uniform response to heat treatment, uniform machinability—from bar to bar and heat to heat. As a result, you have fewer rejects, fewer delays, fewer changes in shop practice.

The uniformity of Timken forging steels is the result of rigid quality control from melt shop through final inspection. For example, the Timken Company uses the direct reading spectrometer—first in the industry—to make possible instantaneous control and checking of every heat before it's tapped.

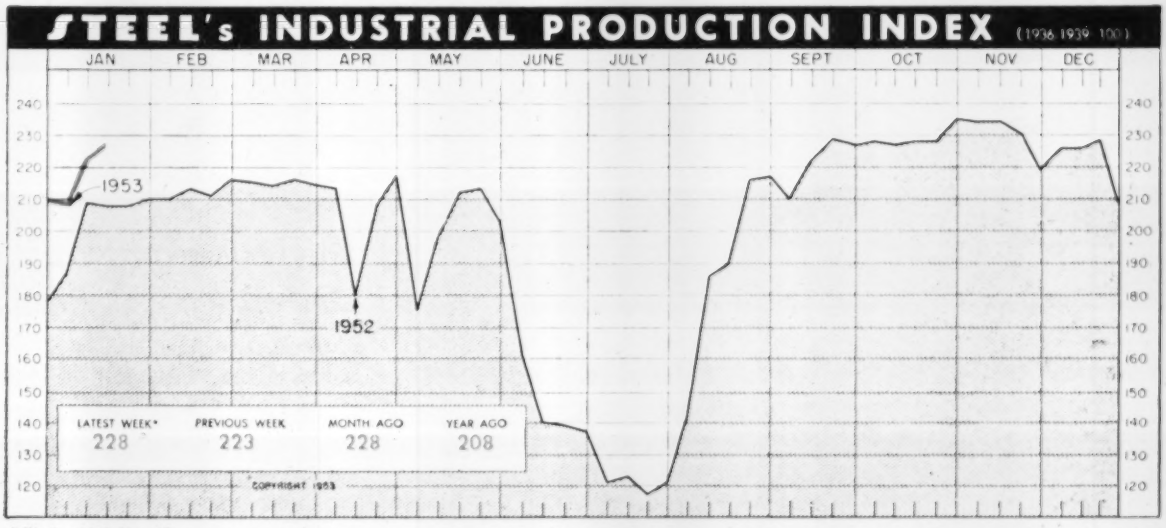
To learn how you can improve the quality of your forgings, cut production costs or both—get an "on-the-job" analysis by our Technical Staff. And for our bulletin No. 51, "Chemical Composition of Alloy Steels", write on your company letterhead to The Timken Roller Bearing Company, Steel and Tube Division, Canton 6, Ohio. Cable address: "TIMROSCO".

YEARS AHEAD—THROUGH EXPERIENCE AND RESEARCH



SPECIALISTS IN FINE ALLOY STEELS, GRAPHITIC TOOL STEELS AND SEAMLESS TUBING

The Business Trend



* Week ended Jan. 17

Based upon and weighted as follows: Steelworks Operations 35%, Electric Power Output 23%, Freight Car Loadings 22%, and Automotive Assemblies (Wards' Reports) 20%.

Industrial activity index continues to climb, although freight car loadings decline. Businessmen watch the new administration before placing new orders

BUSINESS may be slackening its pace a little, just to catch its breath.

Many industries boosting output since the end of the steel strike may be applying the brakes on new orders as businessmen await early decisions of the new administration. This possibility is seen in the more-than-seasonal decline in freight car loadings while other prime indicators of production continue to rise.

The Association of American Railroads reports that loading of revenue freight in January has averaged about 7 per cent under the corresponding weeks in 1952 and more than 10 per cent under the comparable weeks in 1951. Excepting ore, shipments are declining in all commodity groups classified by the association.

Significant Lags—Most significant to the metalworking industry are the declines in the merchandise and miscellaneous freight categories. In the week ended Jan. 10, the nation's railroads shipped 6 per cent less merchandise than they did in the comparable week of 1952, despite considerable improvement in consumer production and demand. Miscellaneous freight, which includes all other durables, are down 2 per cent—a noteworthy decline, considering the over-the-year rise in defense and defense supporting production.

Production Is Rising—Other indicators are continuing to move upward, however, and these gains offset the depressive effects of the fewer car loadings. STEEL's industrial activity index during the week ended Jan. 17 rose 5 points to 228 per cent of the 1936-1939 average. Steel production that week climbed 1.5 percentage points to 99.5 per cent of industry's rated capacity on Jan. 1, 1953. Electricity production, aided by January temperatures, reached a new peak. Production of passenger cars and trucks in the week ended Jan. 17 rose near the high levels attained in November.

Steel Output Heavy . . .

Steel production is continuing at near-record levels, as mills strive to lessen the wide gap between supply and demand. The American Iron & Steel Institute estimates that furnaces in the week ended Jan. 24 poured 2,234,000 net tons of steel for ingots and castings. In the comparable week in 1952, steel output stood at 2,071,000 net tons.

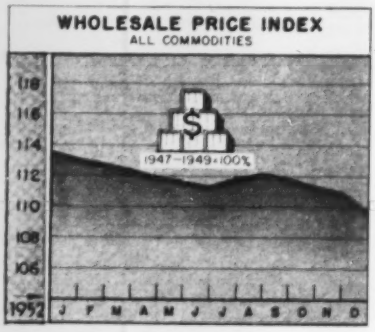
Passenger Car Outlook . . .

The passenger car industry hopes to push output in the first half of 1953 far beyond the limited number of assemblies implied by materials allocations. Steel allotments, for instance, are expected to assure production of 2.5 million passenger cars from Jan. 1 to June 30. But automakers are setting their sights for these months at somewhere over the 3-million unit mark, according to *Ward's Automotive Reports*.

To near this goal, passenger car makers will probably obtain much of the extra steel via the conversion route. Foreign steel will be snapped up too. The industry also is permitted to borrow during the final 15 days of a quarter some of the steel allocated for the succeeding quarter; borrowings may be extensive near the end of June.

Another, but more remote, possibility is that steel decontrol-day may occur before June 30. Many passenger car manufacturers, pointing to the enormous increase in steel production and the stretch-out of defense orders, are expecting quick decontrol on many steel industry products.

At present, the automotive in-

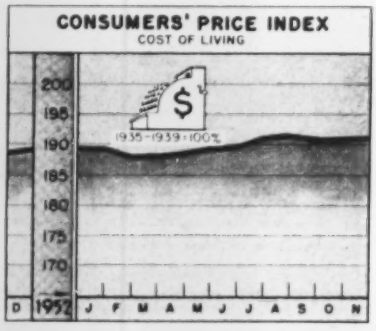


Wholesale Price Index

(1947-1949 = 100)

	1952	1951	1950
Jan.	113.0	115.0	97.7
Feb.	112.6	116.5	98.3
Mar.	112.3	116.5	98.5
Apr.	111.8	116.3	98.5
May	111.6	115.9	99.6
June	111.3	115.1	100.2
July	111.8	114.2	103.0
Aug.	112.2	113.7	105.2
Sept.	111.7	113.4	107.1
Oct.	111.1	113.7	107.7
Nov.	110.7	113.6	109.3
Dec.	109.6	113.5	112.1

U. S. Bureau of Labor Statistics

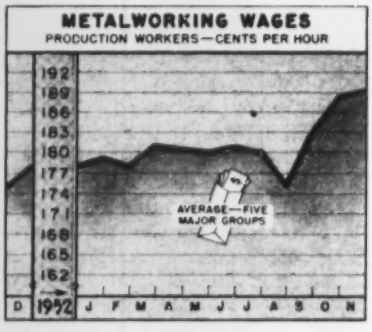


Consumer Price Index

(1935-1939 = 100)

	1952	1951	1950
Jan.	189.1	181.5	168.2
Feb.	187.9	183.8	167.9
Mar.	188.0	184.5	168.4
Apr.	188.8	184.6	168.5
May	189.0	185.2	169.3
June	189.6	185.2	170.2
July	190.8	185.5	172.0
Aug.	191.1	185.5	173.4
Sept.	190.8	186.6	174.6
Oct.	190.9	187.4	175.6
Nov.	191.1	188.6	176.4
Dec.	190.7	189.1	176.8

U. S. Bureau of Labor Statistics



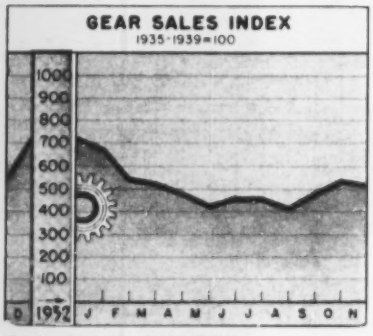
Metalworking Wages

(cents)

Production Workers—Five Major Groups

1951	Prim. Mtls.	Fab. Prod.	Mach. inery	Elec. Mchy.	Trans. Equip.
Nov.	181.9	168.9	170.7	165.5	189.2
Dec.	183.6	170.0	181.7	167.0	190.3
1952					
Jan.	184.7	170.3	182.0	166.9	191.4
Feb.	183.1	170.5	183.0	166.8	190.3
Mar.	184.8	171.5	184.1	169.5	193.4
Apr.	183.0	170.9	183.6	169.5	193.0
May	184.0	171.9	184.0	169.5	192.4
June	183.9	171.5	184.7	170.4	194.0
July	184.3	170.0	184.4	169.5	194.0
Aug.	193.7	172.4	184.5	171.6	194.8
Sept.	199.1	176.3	187.1	173.6	200.5
Oct.	199.0	178.9	188.5	173.0	203.7
Nov.	200.0	179.5	189.1	173.8	204.4

U. S. Bureau of Labor Statistics



Gear Sales Index

(1935-1939 = 100)

	1952	1951	1950
Jan.	670.6	761.6	280.2
Feb.	539.5	809.1	272.9
Mar.	517.1	830.7	358.4
Apr.	478.7	742.5	328.6
May	425.9	667.1	363.1
June	452.3	809.9	401.0
July	453.9	589.1	410.7
Aug.	413.9	564.2	617.4
Sept.	485.0	630.1	654.5
Oct.	533.1	703.4	564.8
Nov.	516.0	530.0	554.9
Dec.	....	716.5	680.4

American Gear Mfrs. Assn.

Charts Copyright 1953 STEEL

Issue Dates on other FACTS and FIGURES Published by STEEL

Construction	Nov. 24	Gray Iron Castings	Jan. 12	Ranges, Elec.	Dec. 8
Durable Goods	Jan. 18	Indus. Production	Dec. 22	Refrigerators	Dec. 8
Employ., Metalwkg.	Jan. 18	Ironers	Dec. 22	Steel Castings	Jan. 12
Employ., Steel	Dec. 15	Machine Tools	Dec. 15	Steel Forgings	Jan. 12
Fab. Struc. Steel	Dec. 22	Malleable Castings	Jan. 12	Steel Shipments	Nov. 3
Foundry Equip.	Dec. 29	Pumps	Dec. 8	Vacuum Cleaners	Dec. 22
Furnaces, Indus.	Dec. 29	Radio, TV	Dec. 15	Washers	Dec. 29
Freight Cars	Dec. 29	Ranges, Gas	Jan. 18	Water Heaters	Jan. 18

dustry is trying nearly everything to raise both passenger car and truck production. Manufacturers in the U. S. and Canada in the week ended Jan. 17 raised production more than 9000 units to 148,718 passenger cars and trucks, or approximately 50 per cent over production in the corresponding week of 1952. U. S. and Canadian production in the week ended Jan. 24 is estimated by STEEL at 149,000 passenger cars and trucks.

Living Costs Level Out . . .

Indicating that many inflationary pressures are receding, the cost of living is remaining at levels attained in the midsummer of 1952. The consumer price index of the Bureau of Labor Statistics in the month ended Dec. 15 dipped 0.4 of a point to 190.7 per cent of the 1935-1939 average. (See chart, left).

At the same time, the bureau announces that its new cost-of-living index will be issued at the end of February. The new index—now causing labor controversies in Detroit—is based on 1947-1949 = 100.

Ewan Clague, commissioner of labor statistics, says that the new index will better reflect today's purchasing patterns of city wage and salary workers. Improved accuracy also will be attained by increasing the items priced to 300 from 250 commodities and by expanding the number of cities surveyed each month.

New Record in Steel Jobs . . .

Employment in the iron and steel industry continued on its record-breaking path by increasing 3500 persons to 680,300 workers on Dec. 1. So says the American Iron & Steel Institute, which estimates that average hourly earnings in November rose 24 cents. Wage earners worked an average of 39.6 hours a week in November, or 2.2 hours less than the postwar record set in October. Industry payroll in November is estimated at $269.7 million, nearly $13.2 million under October, but $27.6 million over wages paid in November, 1951.

Most Store Sales Good . . .

Most retailers are chalking up good sales volumes for January. The Federal Reserve Board says

BAROMETERS OF BUSINESS

	LATEST PERIOD*	PRIOR WEEK	YEAR AGO
INDUSTRY			
Steel Ingot Output (per cent of capacity)[2]	99.5	98.0	97.0
Electric Power Distributed (million kwhr)	8,190	8,185	7,340
Bituminous Coal Output (daily av.—1000 tons)	1,280[3]	1,277	1,234
Petroleum Production (daily av.—1000 bbl)	6,480[3]	6,468	6,196
Construction Volume (ENR—millions)	$548.8	$323.7	$249.2
Automobile, Truck Output (Ward's—units)	148,718	139,620	98,669
TRADE			
Freight Car Loadings (unit—1000 cars)	690	688	748
Business Failures (Dun & Bradstreet, number)	158	163	158
Currency in Circulation (millions)[4]	$29,884	$30,153	$28,526
Dept. Store Sales (changes from year ago)[5]	—3%	+5%	—14%
FINANCE			
Bank Clearings (Dun & Bradstreet, millions)	$16,551	$16,896	$16,633
Federal Gross Debt (billions)	$267.3	$267.3	$259.3
Bond Volume, NYSE (millions)	$19.7	$19.6	$15.7
Stocks Sales, NYSE (thousands of shares)	7,723	9,845	8,339
Loans and Investments (billions)[4]	$78.1	$78.5	$73.7
United States Gov't. Obligations Held (billions)[4]	$32.4	$32.5	$32.1
PRICES			
STEEL's Weighted Finished Steel Price Index[6]	181.31	181.31	171.92
STEEL's Nonferrous Metal Price Index[6]	213.2	216.0	234.9
All Commodities[7]	109.7	109.8	113.5
All Commodities Other Than Farm and Foods[7]	112.8	112.9	114.1

*Dates on request. [2]Preliminary. [2]Weekly capacities net tons: 1952, 2,077,040; 1953, 2,254,450. [3]Federal Reserve Board. [4]Member banks, Federal Reserve System. [5]1935-1939=100. [6]1936-1939=100. [7]Bureau of Labor Statistics Index, 1947-1949=100.

that the nation's department stores in January are taking in nearly 3 per cent more in dollar volume than in the comparable weeks in 1952. And indications are that present demand is higher than present volume as transportation strikes in New York and Philadelphia sheared sales in those areas. In the week ended Jan. 17, department store sales in metropolitan Philadelphia plunged 25 per cent under the like week in 1951. New York stores, on the other hand, found sales dipped only 2 per cent. Price reductions are said to be persuading many New Yorkers to walk to shopping centers.

Business Failures Ebb . . .

Business failures in 1952 dropped 6 per cent, marking the third consecutive year of downtrend. But failures of manufacturing and mining enterprises increased over 1951.

Company mortalities in 1952 totaled 7611 firms, compared with 8058 failures in 1951, says Dun & Bradstreet Inc. Yet failures in the manufacturing and mining category rose by 47 companies to 1581 mortalities. Failures in 1952 increased to 50 firms from 40 in the iron and steel industry, increased to 131 firms from 106 in the machinery industry and 44 makers of transportation equipment decided to close their doors in 1952, compared with only 18 in 1951.

TV Production Soars . . .

Television manufacturers will show an enormous sales volume for 1952, despite the depressive effects of materials shortages. The Radio-Television Manufacturers Association says that 5.2 million TV sets were shipped to dealers in 1952 by Dec. 1. The 5.2 million total compares with 4.4 million TV units shipped in the first 11 months of 1951.

Home Construction High . . .

Homebuilding in 1952 edged up over the 1951 unit-total but was still under the record dwelling construction in 1950. The Bureau of Labor Statistics reports that 1,131,300 nonfarm dwelling units were put in place during 1952, compared with 1,074,300 units in 1951 and 1,396,000 units during 1950.

Trends Fore and Aft . . .

Total value of mineral production in 1952 remained at $13.5 billion, the same as in 1951 . . . High employment in industrial construction, will continue for at least the first six months of 1953, says the National Constructors Association.

Headquarters for

52100

Steel Tubing and Bars

Largest Stocks in the Country...

of this versatile steel. 52100 is hard, tough and long-wearing, yet it's easy to machine and is right for bearings, sleeves, pins, collars and many other machine parts.

Over 200 seamless tube sizes to choose from .898" O. D. to 8.250" O. D. Bar sizes from .171" round to 7.5" round. Also ring forgings in any analysis.

Write for our Latest Stock List Now

PETERSON STEELS, INC.

DEPT. S, SPRINGFIELD ROAD
UNION, NEW JERSEY

Detroit, Mich. • Chicago, Ill.

Jackson TELEVISION

Channels 63% Savings

WITH TINNERMAN SPEED NUTS®

● Engineers at Jackson Industries, Inc., Chicago, Ill. are "on the beam" when it comes to maintaining TV quality at production line speeds. They found the SPEED NUT way of attaching their new Tri-Lok television chassis to the cabinet picked up a neat 63% production savings! This attachment was one of their toughest fastening problems . . . to solve it Jackson found a standard Tinnerman part tailor-made and engineered for the job!

Four angle brackets are used to fasten the chassis to the cabinet. In the old way, an angle bracket was threaded to receive a machine screw, and it was necessary to align the screws perfectly with the threaded holes since the attachment is in a "blind" position.

SPEED NUTS eliminate the tapping operation required in threading the angle brackets, making hole alignment easier, faster! Now Jackson has adapted this part into their standards along with a 63% savings in time and materials-handling!

You can turn your fastening problems into production savings . . . do as thousands of manufacturers are doing . . . turn to Tinnerman for a FREE FASTENING ANALYSIS of your products. The Tinnerman representative in your area will be happy to give you the full details on this great service. Call on him today or write direct to: TINNERMAN PRODUCTS, INC., Dept. 12, Box 6688, Cleveland 1, Ohio.

In Canada: Dominion Fasteners Ltd., Hamilton, Ontario. *In Great Britain:* Simmonds Aerocessories, Ltd., Treforest, Wales. *In France:* Aerocessoires Simmonds, S.A.—7 rue Henry Barbusse, Levallois (Seine.)

THE OLD WAY:
The 4 angle brackets were drilled and tapped to receive machine screws in attaching the chassis to the cabinet; hole alignment was always a problem since brackets are in "blind" positions.
THE SPEED NUT WAY:
The SPEED NUT Principle of Spring Tension fastening applied to the 4 angle brackets eliminates these hole alignment problems providing sturdy, vibration-proof attachment.
TINNERMAN Speed Nuts
FASTEST THING IN FASTENINGS

Men of Industry

S. H. BEACH
. . . sales position at Iron Fireman

SAMUEL S. AUCHINCLOSS
. . . new president of DeWalt Inc.

WILLIAM H. BENNETT
. . . director of engineering at H-P-M

Iron Fireman Corp., Cleveland, promoted **S. H. Beach** to industrial sales manager for the U. S., a newly created position. Formerly midwest division engineer with headquarters in Cleveland, he was advanced a year ago to service and installation engineering manager.

Pittsburgh Screw & Bolt Corp., Pittsburgh, appointed **Robert B. Algie** as assistant vice president-sales. He formerly was assistant manager of sales, Jones & Laughlin Steel Corp., and recently was associated with Forbes Steel Corp.

Chandler-Boyd Co., Pittsburgh, appointed **E. A. Duffy** vice president, general manager and a director. He has been with the company since 1945 serving in various sales capacities including the position of vice president-sales. In his new position he continues direction of sales as well as all other company operations.

Grant A. Sattem was promoted from general sales manager to vice president in charge of sales of **Luria Engineering Corp.**, New York.

E. C. Bleam and **R. E. Goodfriend** were made district supervisors for **Joseph Dixon Crucible Co.** Mr. Bleam will have headquarters in Chicago, Mr. Goodfriend in Columbus, O.

Samuel S. Auchincloss was elected president, **DeWalt Inc.**, Lancaster, Pa., subsidiary, American Machine & Foundry Co. Executive vice president since August, 1952, he now succeeds **Paul Gardner**, resigned. **Jerome H. Eigenberger** was made district manager in the southwest with headquarters in Houston.

Harland L. Farling was named chief metallurgist of **Republic Steel Corp.'s** Cleveland district steel plant to succeed **Thomas M. Chapman**, who assumes new duties as contact metallurgist for the district's bar mills.

Northrop Aircraft Inc., Hawthorne, Calif., appointed **Dr. William F. Ballhaus** assistant chief engineer in charge of analytical activities. He was formerly chief of preliminary design at Consolidated-Vultee Aircraft Corp. **Clare Harris** was named assistant chief engineer in charge of projects and components; **Frank B. Bolte** chief of engineering research; **Stanley J. Worth** chief engineering administrator; **W. R. Clay** chief project engineer; and **R. A. Hall** chief of the newly established electro-mechanical laboratories.

H. G. Engel was made assistant general sales manager, **Four Wheel Drive Auto Co.**, Clintonville, Wis.

Hydraulic Press Mfg. Co., Mt. Gilead, O., promoted **William H. Bennett** to director of engineering. He was assistant sales manager before assuming his new duties.

Carl A. Boehme was appointed assistant superintendent, cold strip department, Campbell Works, **Youngstown Sheet & Tube Co.**, Youngstown.

New vice presidents of **Great Lakes Steel Corp.**, Ecorse, Mich., are **C. L. Bayer** who also becomes assistant manager of operations; **Paul Carnahan** in charge of sales; **William Kerber** attached to the president's office for special assignments. **Charles P. Betz**, blast furnace division general superintendent, was elected assistant vice president.

John A. Slenker was named assistant vice president of operations of **American Steel & Wire Division**, Cleveland, U. S. Steel Corp. He is succeeded as district manager of operations at Duluth by **Harold Cope**, formerly general superintendent for the wire division in Donora, Pa.

J. D. Harby was made superintendent of instrument engineering and **J. D. Dutcher** superintendent of instrument manufacturing by **Bausch**

FRANK R. S. KAPLAN
. . . president of Ohio Seamless Tube

DAVID J. MARCUS
. . . Steelcraft V. P.-purchasing

JOHN SILVER
division V. P. at Motorola

& Lomb Optical Co., Rochester, N. Y.

Frank R. S. Kaplan was elected president and director, **Ohio Seamless Tube Co.**, Shelby, O., which was recently acquired by Copperweld Steel Co. **C. A. Taylor** was elected vice president and controller, and four directors of Copperweld to serve on the board of Ohio Seamless are: **H. G. Riter, III, D. V. Sawhill, R. V. Mitchell** and **L. B. Keplinger. W. C. Connelly** was elected chairman of the board.

Hugh S. Terrell was appointed assistant manager of sales for Union Drawn Steel Division, **Republic Steel Corp.** He continues headquarters in Massillon, O., at the division's general offices. In his new post he succeeds **Henderson E. McPherson**, transferred to Republic's Pittsburgh district sales office as sales manager.

Steelcraft Mfg. Co., Rossmoyne, O., appointed **David J. Marcus** as vice president in charge of purchasing and **Ben J. Sloman** as assistant secretary. Mr. Marcus has been director of purchases for four years.

Whitney B. Miller was appointed by **Moore Products Co.** as manager of the Louisville branch office. He previously was at Houston.

At **Taft-Peirce Mfg. Co. Wendell F. Carney** becomes New York sales manager to replace **Joseph N. Tellier**, retired. **Frank G. Billmire** replaces Mr. Carney as sales manager, Chicago territory.

John Silver, formerly general manager, communications and electronics division, was promoted to vice president-operations in the division for **Motorola Inc.**, Chicago.

Daniel D. Sugerman was placed in charge of the structural steel and reinforcing bar division and appointed assistant to the sales manager at **Laube Steel Co.**, Chicago. He also serves as manager of the aluminum division.

In the purchasing division of **United States Steel Corp.**, Pittsburgh, **R. M. Brown** was made purchasing agent, iron and steel scrap; **W. W. Crawford** purchasing agent and **R. F. Dyson** assistant purchasing agent, electrical and mechanical equipment, and **R. D. Crowley** purchasing agent and **R. J. Mackenzie** assistant purchasing agent, construction, materials and services.

A. M. Kennedy Jr., E. S. Goodwin and **J. S. Jacox** were appointed assistant general managers of purchasing for **Westinghouse Electric Corp.**, Pittsburgh.

Newly appointed executive engineers of **Chrysler Corp.**, Detroit, are: **P. C. Ackerman**, laboratories; **A. B. Couture**, laboratories; **A. G. Herreshoff**, development design; **P. J. Kent**, electrical; **E. P. Lamb**, truck engineering; **F. W. Slack**, chassis design; and **U. L. Thomas**, body engineering. The following were named chief engineers: **H. E. Chesebrough**, body engineering; **A. G. Loofbourrow**, chassis design; **I. C. McKechnie**, electrical; **Karl Pfeiffer**, laboratories; **S. J. Tompkins**, truck engineering; and **C. C. Utz**, ordnance.

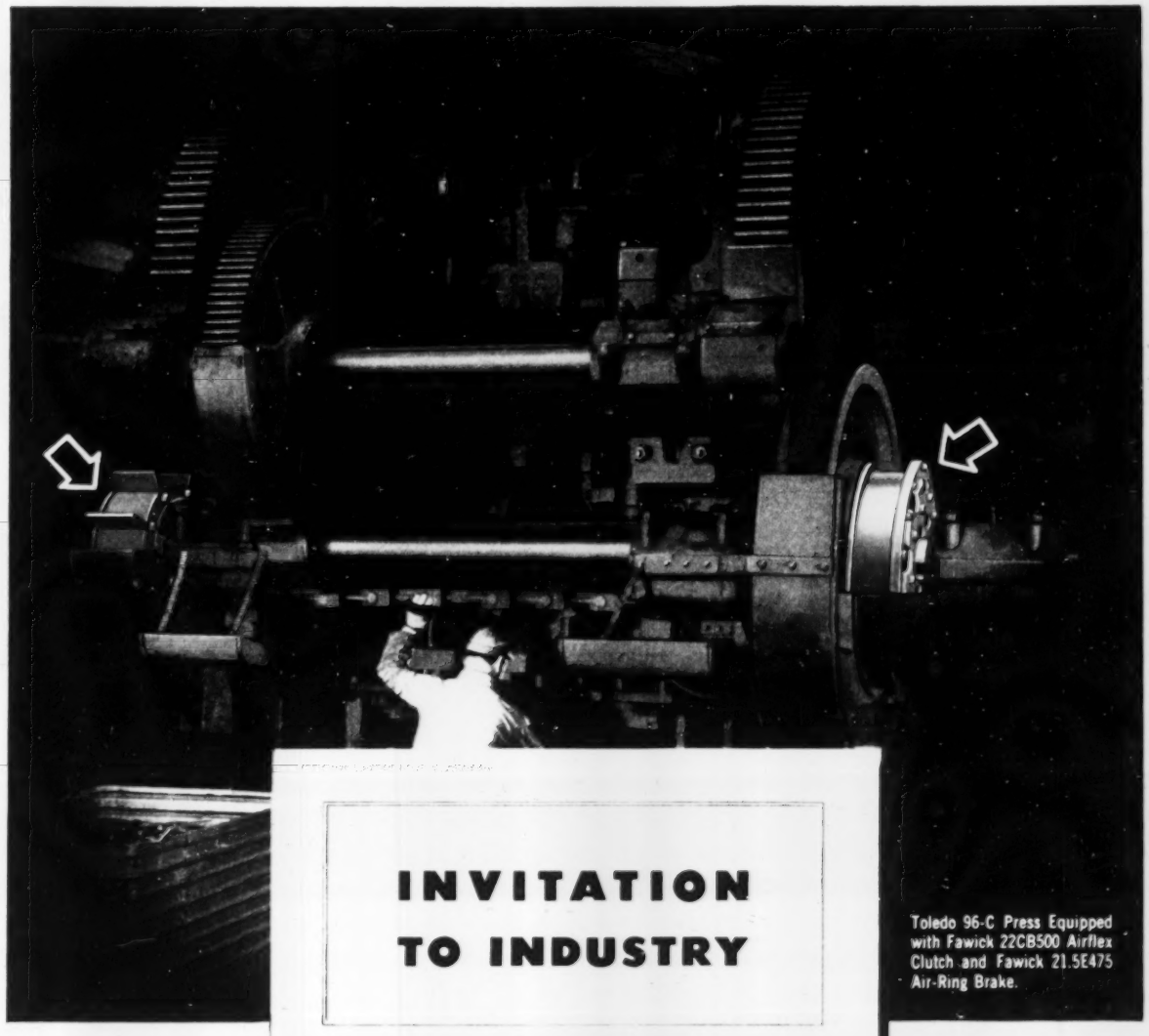
Arwood Precision Casting Corp., Brooklyn, N. Y., announces that on Feb. 1 **William O. Sweeney** will join the organization as assistant vice president of sales. He formerly was sales and development manager, Haynes Stellite Division, Union Carbide & Carbon Corp.

D. Pat Cromwell was appointed manager of blast furnaces and coke ovens of **Ford Motor Co.'s** Rouge plant, Dearborn, Mich. He succeeds **Dan L. Newkirk**, retired.

John V. Banks was appointed vice president in charge of manufacturing, automotive division, **Kaiser-Frazer Corp.**, Willow Run, Mich., with supervision over automotive engineering and purchasing divisions.

Farrel-Birmingham Co. Inc., Ansonia, Conn., appointed **Roger E. Vaughan** assistant general manager of the subsidiary, **Consolidated Machine Tool Corp.**, Rochester, N. Y. He formerly was assistant general manager of the Farrel-Birmingham Buffalo plant.

Clifford Metal Sales Co., Providence, R. I., appointed **Phillip A. Painchaud** as sales engineer. Formerly district manager of Revere Copper & Brass Co. for more than 28 years, he now is available for consultation with Clifford customers regarding any problem con-



INVITATION TO INDUSTRY

Toledo 96-C Press Equipped with Fawick 22CB500 Airflex Clutch and Fawick 21.5E475 Air-Ring Brake.

The name FAWICK has gained world-wide industrial recognition for progressive policies in the development of power transmission products, represented by FAWICK AIRFLEX INDUSTRIAL CLUTCHES AND BRAKES.

Thousands of "performance-proved" FAWICK installations are providing industrial production equipment with new high standards in production speed and accuracy, safety, and operating efficiency.

You are cordially invited to use the outstanding FAWICK ENGINEERING SERVICE to investigate the advantages of FAWICK AIRFLEX INDUSTRIAL CLUTCHES AND BRAKES as applied to your production machines.

FAWICK AIRFLEX DIVISION

FEDERAL FAWICK CORPORATION

9919 CLINTON ROAD • CLEVELAND 11, OHIO

FAWICK Airflex

INDUSTRIAL CLUTCHES AND BRAKES

J. M. COSGROVE
. . . new position at Kaiser Steel

RALPH E. CLARRIDGE
. . . Taylor Instrument chief eng.

A. O. THALACKER
. . . president of Detrex

cerning metals and fabrication of metals.

J. M. Cosgrove was named to fill a newly created **Kaiser Steel Corp.** position of manager, tin plate sales, Fontana, Calif. He has been active at the company's home office in Oakland, Calif., in development work on the tin plate program.

R. H. Zeilman was named director of engineering at **Thew Shovel Co.**, Lorain, O. **M. L. Sheetz** was appointed chief executive engineer and **O. Van Mehren** chief design engineer. **E. C. Brekelbaum**, former vice president and executive engineer, Harnischfeger Corp., was made director of methods, a newly created post.

Stamco Inc., New Bremen, O., promoted **Elton W. Bruns** to chief engineer. **Richard E. Black** was made sales and service representative, **Myron L. Kuck** chief draftsman.

Ralph E. Clarridge became chief engineer for **Taylor Instrument Cos.**, Rochester, N. Y. He replaces **Karl H. Hubbard** who was made technical director. Mr. Hubbard also serves on the board of directors. Replacing Mr. Clarridge as manager, application engineering department, is **George E. Howard**, formerly assistant manager. Other changes involve **Robert D. Thompson**, named division head in charge of research, design, methods and technical sales, glass products division; **L. C. Liberatore, D. W. Shepardson** and **J. R. Davidson**, all engineering section heads.

George B. Haas was appointed advertising manager, **Earle M. Jorgensen Co.**, Los Angeles.

Chester C. Sanders was appointed supervisor of production and traffic at **Armco Steel Corp.'s** Zanesville, O., division. He succeeds **Ernest A. Stradley**, retired.

A. O. Thalacker was elected president, **Detrex Corp.**, Detroit. **Robert A. Emmett Sr.**, founder and past president, was elected chairman of the board. Mr. Thalacker, former vice president and general manager, joined the company in 1937.

W. R. Spearrin was appointed manager of the newly created standard products division at Mattatuck Mfg. Co., Waterbury, Conn. **Joseph F. Dunn**, secretary, will have charge of contract manufacturing sales division. Mr. Spearrin formerly was with Scovill Mfg. Co.

Richard J. Skillman was named purchasing agent, **General Refractories Co.**, Philadelphia. He succeeds **J. A. Ross**, appointed director of purchases.

Ted Nemes was named sales manager for the newly created air conditioning division of **Admiral Corp.**, Chicago.

OBITUARIES . . .

Charles H. Herty Jr., 56, assistant to the vice president, **Bethlehem Steel Co.**, Bethlehem, Pa., died Jan. 18. A leading authority on steelmaking, Mr. Herty introduced many improvements in open-hearth furnace practices and devised the Herty viscosimeter for testing slag.

G. R. Weber, 75, vice president, **Raybestos-Manhattan Inc.**, and manager of the subsidiary, United States Asbestos division plant at Manheim, Pa., died Jan. 14.

Carl D. Fischer Jr., 71, president and general manager, **Wapakoneta Machine Co.**, Wapakoneta, O., died Dec. 28.

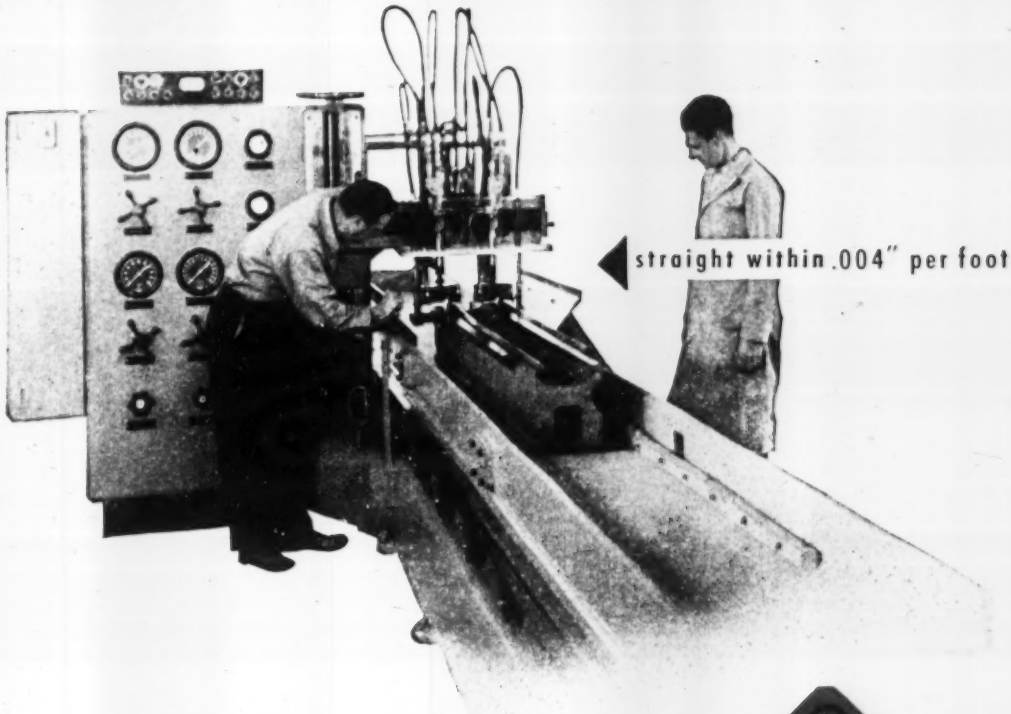
Clyde B. Ziegler, 54, purchasing agent for **General Electric Co.**, Erie, Pa., died Jan. 14.

Edward S. Alden, 64, vice president and treasurer, **Whitin Machine Works**, Whitinsville, Mass., died Jan. 10.

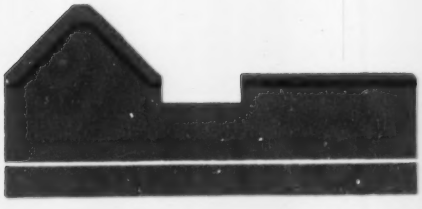
Frank J. Kotwas, 44, one of the founders of **Rochester Tool & Die Co.**, Rochester, N. Y., died Jan. 8.

G. R. McKeage, 74, head of **Beach Mfg. Co.**, Montrose, Pa., died Jan. 13.

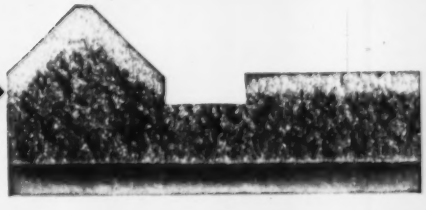
Herman A. Bauers, 58, purchasing agent for **Cherry-Burrell Corp.** at Milwaukee, died Jan. 16.



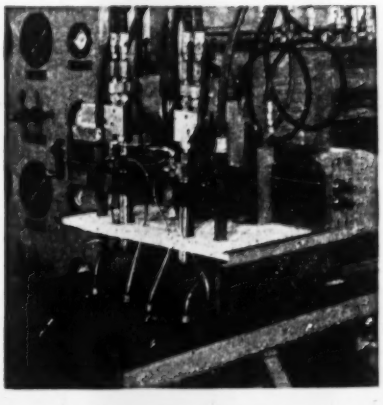
specified →



achieved →



lathe bedways flame hardened to Shore 70-75



Cincinnati Flamatic makes news again: selective "flat hardening" that adds an important sales feature to Cincinnati Lathe & Tool Co. Tray-Top Cintilathes, and cuts costs at the same time. The job was to (1) give maximum surface hardness to the cast iron bedways (2) maintain a uniform pattern (3) keep the ways straight within grinding limits (4) obtain high production.

A special Flamatic hardening machine with stationary flame heads with integral spray water quench (see closeup) does a straight-line production job. Work travel is 6" per minute. Floor-to-floor time is less than one hour per 72" bed. Customer requirements more than fulfilled.

Gears, cams, rollers, parts with multiple diameters, etc., up to 18" OD depending on width or shafts up to 24" long depending on OD are readily handled on the Standard Flamatic. Write for Catalog M-1724 which gives case histories. Send part prints for analysis, recommendations.

flamatic

THE CINCINNATI MILLING MACHINE CO.

Cincinnati 9, Ohio, U.S.A. • CINCINNATI

ELIMINATE
waste motions in production

SWITCH TO
Eaton Springtites and Sems

(Bolt or screw preassembled with spring lock washer)

The motions used by a production line worker on bolted assembly operations shown in figure 1 above differ from the motions used by the worker pictured in figure 2. This difference is graphically shown by light lines taken from actual factory production photographs. This difference in motions made possible by Eaton Springtites and Sems means higher production quotas and increased manufacturing profits. Why?

Because they are preassembled units, Eaton Springtites and Sems eliminate the need for assembling the spring lock washer on the bolt. Losses of separate washers and bolts are cut, while double requisitioning, purchasing, inventory is eliminated. Then too, Eaton Springtites and Sems are easy to use in hard-to-get-at places, and yet can be hopper fed for automatic screw driving. Most important, Eaton Reliance quality preassembled Standard ASA Spring lock washers and bolts assure greater product quality. See your nearest Reliance Sales Office for complete details on Eaton Springtites and Sems or write directly for Engineering Bulletin No. S-49.

RELIANCE DIVISION

EATON MANUFACTURING COMPANY

OFFICE and PLANTS: 514 Charles Ave. MASSILLON, OHIO

Springtites & Sems · Snap & Retaining Rings · Special Steels in bar, rod or coils · Spring Lock Washers · Hex-Flex Nuts

SALES OFFICES New York • Cleveland • Detroit • Chicago • St. Louis • San Francisco • Montreal

Production AND Engineering NEWS AT A GLANCE

HEAVYWEIGHT METAL—A non-cutting metal of extremely high density is being marketed by Metal Carbides Corp., Youngstown. Chief constituent is tungsten and its specific gravity exceeds 17.5 grams per cubic centimeter or 50 per cent greater than lead. A high resistance to the penetration of radioactive rays makes it well fitted for screening from atomic radiation. The metal is also suitable for static and dynamic balancing and for applications requiring maximum weight in minimum space like balance weights on crankshafts, gyroscopes, propellers and centrifugal clutches.

AIR POWER—Compressed air is going to work on an ever increasing scale. It is easily applied to many tasks, the original cost is usually low and the maintenance costs are small. It's being used on vises, chucks and ejectors. It's also working as the power for drill machine feed. One small company feels that the savings accruing from use of air help it in its competition with larger firms. p. 68

OUT OF ROUND—Automatic production of non-circular gears is being achieved through the development of a new machine by Dr. Frederick W. Cunningham, a Connecticut physicist. One of the interesting elements is the use of a moving picture projector and film. Three columns of spots on the film do the work. The film is driven continuously and projected on a row of photo tubes. Each spot actuates one of the three drives. The control system is largely composed of standard components originally developed for use in fire control equipment for the Army and Navy.

DISTORTION—It's still a major problem. Metallurgical advances in both steel chemistry and heat treating technology have gone a long way toward alleviating the situation, but it is still with us. One step was the disproving of the assumption that air-hardening steels are non-distorting. Parts made from air-hardening steels, though acquiring less distortion than the oil or water hardening types, usually demand greater precision. To keep distortion down: Use upset forged raw material, don't stress relieve prior to hardening, mount work properly for soaking, equalize cooling rate on all sides. p. 70

HANGARS AWAY—What is probably the first mobile hangar is located at the Cherry Point Marine Corps Air Station. Getting planes airborne is simplified since the structure can be pulled apart at the flick of a switch and the aircraft can taxi out to the strip without jockeying around. The diamond shaped structure is composed of two 55-ton triangular steel shells mounted on wheels running on tracks. Standard structural components are used to fabricate it. At each diamond pointed end are workshops equipped with tools and machinery needed for servicing planes. A newer model in the works will be mounted on rubber wheels and be capable of roaming all over the airport at speeds up to 35 miles per hour. It will probably drive visiting pilots to taking the temperance pledge.

EASING THE PINCH—Among conservation measures being adopted to conserve copper is one on a familiar item found around most homes. Worthington Gammon Meter Division of Worthington Corp. is testing 5000 water meter register boxes and covers made of Kralastic instead of bronze. The tough plastic made by Naugatuck Chemical has already shown its ability to take the rough treament it will get.

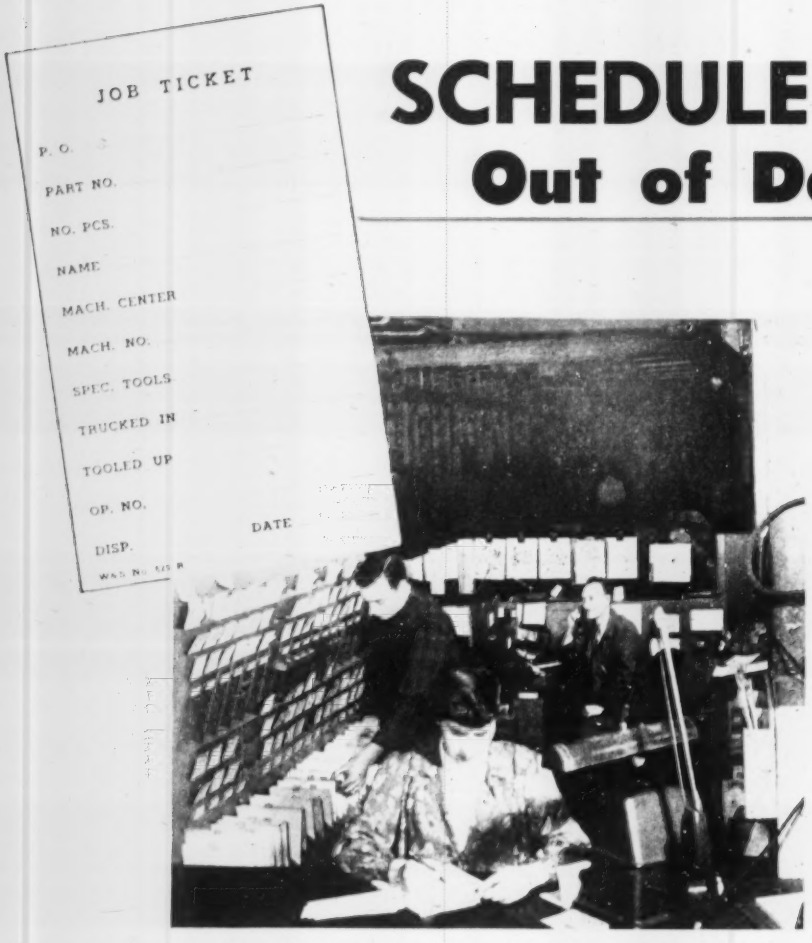
ENGINEERED SAVINGS—When they started to plan for their new plant, Atwood Vacuum Machine Co., Rockford, Ill., used a ¼-inch to one foot scale model as a guide . . . and it paid off. Their departments, both office and manufacturing and located according to the "line of production." Tool engineering is adjacent to the tool room, for instance, for easy and immediate contact. As a result of this sort of layout, throughout the plant and some additional handling improvements, they have reduced the distance that material moves 80 per cent. Material handling cost is down about 50 per cent. The scrap handling sysem is an important factor in the new plant. p. 76

STANDARD PAYMENT—Uniform standards for the selection and payment of architectural and engineering firms for professional services to Army, Navy and Air Force construction agencies were approved by the Munitions Board. Kinds of work for which such professional services are required, include the preparation of plans and specifications for public works and similar technical matters.

MIGHTY MOTORS—Four giant motors to be installed in an Air Force transonic and supersonic wind tunnel are nearing completion at Westinghouse Electric Corp.'s E. Pittsburgh plant. Two of the motors are in a class by themselves each being rated at 83,000 hp, and the two smaller units are rated at 25,000 hp. In addition to the 216,000 hp four motor drive, the rotating machine will have five compressors also being built by the company at Sunnyvale, Calif. The transonic compressor will be a single unit but the supersonic compressor will be made up of four compressors coupled as one. Blades for the compressor measure 2 feet across the face, are 6 feet long and will be mounted on a spindle 18 feet in diameter. They weigh almost two-thirds of a ton each.

Metalworking Outlook—p. 29 *Market Outlook—p. 107*

SCHEDULE A *SLICE* Out of Down Time



When your machine operator takes time between jobs to look for tools and find his new job, valuable machine time goes down the drain. By organizing the flow of jobs and selection of tools you can schedule this down-time to a minimum

Dispatcher's booth in the turret lathe department is control center for job traffic. Inset is job ticket for department records

IF YOU'RE interested in increasing the productivity of a machining department, stepping up the efficiency of machine operation is the first and most natural place to start.

It isn't the only factor to consider however. Machines can be producing at a phenomenal rate but if the flow of material into, through and out of the department is not smooth and efficient, department production lags.

Warner & Swasey Co., Cleveland, recently streamlined the flow of material and parts through many of their departments. What happens in the turret lathe department is a good example.

Boosts Output — George Meyer, manager of production scheduling, estimates that a productivity increase of about 25 per cent in this department can be traced directly to the use of the new system.

Here's how it works.

When the job is trucked into the turret lathe department, a department trucker takes the material to a turret lathe department storage area and locates it according to the machine for which it is intended. This information is on a traveler which goes with the job through its complete shop cycle.

The Sign—If the job is to be run on a 1-A, it is stored in that location. If it is to be run on a No. 4 machine, it is located in that area. Machine locations are spotted by signs on the walls of the storage area.

After the trucker has placed the material in the storage area he drops the traveler in a box at the dispatcher's desk in the turret lathe department. The dispatcher then files the traveler according to a manufacturing order (*MO*) number.

Assignment — Next he pulls a route card from the traveler and assigns the job to a machine group by dropping the card in a group box. It is filed in sequence by the *MO* number.

This card moves forward as the jobs ahead of it are handled and when it comes to the front it is assigned to a particular machine in its group. At this time the dispatcher puts the job setup card in a "to be tooled" slot for the attention of the tool selector.

Tools Reserved—This setup card describes all the machining operations to be performed and also tells what tools will be used. If any special tools are involved they are

listed by their serial numbers on the card.

Tool selector then takes the setup card and white job ticket attached to it and checks in the tool crib for all special tools. These are laid aside and marked in reserve for the designated job.

Trucked In—The setup card and white job ticket are then returned to the box and put in the "tooled up" slot. If all special tools are not available a note is made on a "special tools ordered" form and job is held in storage area pending availability of these special tools.

If special tools are available dispatcher takes off the job ticket and puts it in the truckers box. The hand trucker (assigned to turret lathe department) picks up the job at the storage area and moves it to a location at the assigned machine. He returns the slip so the dispatcher will know the material is at the machine.

The tool selector then gets all tools for the job (including specials, standard drills, reamers, cutters, etc.) and puts them with the job.

The Switch—When the operator finishes one job he hails the trucker and has the finished job moved out and the new one moved in. While this moving is going on the operator can be setting up for the next job since all the tools are with the job. There is no need for him to take valuable machine time for chasing down his tools.

Once a job is beside a machine —it goes. Only the red tab (rush order) can pass it by.

Glance Survey—Tabs on cards on the machine group board in the dispatcher's office tell the status of the job. Yellow means the job is in storage area. Green tells that it is tooled and ready to go and blue means that the stock has been ordered but not received.

By simply scanning these tabs, the dispatcher or the foreman can tell the general production conditions in their department. They can readily see that there is a sufficient backlog in any given area to insure a smooth and continuous flow of jobs through the department.

An additional advantage of the new system is that it has lessened the need for priority ratings on jobs. Since they are handled by the *MO* number with no unnecessary delay, most jobs are processed through on schedule.

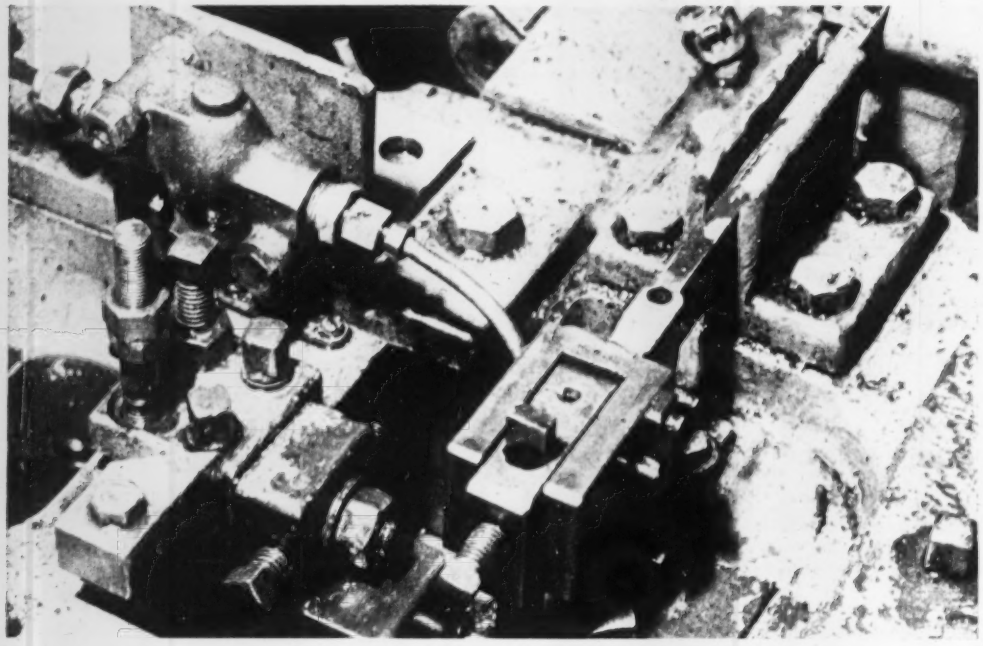
This same system is being used in many of Warner & Swasey's departments. On a plant-wide basis, it accounts for a marked reduction in the number of shortage lots and rush orders.

Key to the functioning of the system is in the production scheduling department. As soon as the *MO* number is assigned, the pattern for any job is set except for such rescheduling as is necessary.

Sequence of operations is known and the completion date can be estimated. After that it's simply a case of the expediters keeping track of the job in the shop. Any slow-ups are reported immediately to the plant superintendent and the production scheduling department.

Workpieces for turret lathe jobs are on platforms or in boxes for easy trucking. When job is finished the platform is moved out and new job moved in

View of department shows jobs waiting across the aisle from machines to which they are assigned. Racks are for chuck jaws, bushings and boring bars



Screw header machines at Aero have air jets for ejecting blanks. Air line and valve are seen at the left

Air Keeps Small Plant In The Running

Pneumatic vises, chucks and ejectors boost production for fastener manufacturer. Versatility and low original cost stimulate use of air power in small plant

ONE important production aid for a small manufacturer in competition with large firms is the great versatility of compressed air power, according to Aero Fastener Corp., Burbank, Calif. It is easily applied to many tasks, usually the means for applying it is inexpensive in original cost with further saving coming from low maintenance cost and uninterrupted operation.

Aero makes screws, rivets and fittings for many of the principal airplane manufacturers and is selling in competition with much larger firms. Its uses for compressed air are few and relatively simple, but they also are an important contribution to low operating costs.

Start with Vises—The company has many small drilling operations. To facilitate this work, air-operated vises have been developed to hold the work so the operator will have a free hand for feeding the machine and will not lose time by manual tightening.

Typical example is the application on drill presses. Instead of having the usual foot pedal for actuating the vise, the act of pulling down the spindle also actuates the vise and releases it as the spindle is raised.

Air Feed, Too—The adoption of air-operated vises was responsible for substantial increases in productivity over the previous manual method. Success from the change caused the company to further study possibilities for the application of compressed air to the drilling operation, and it has decided to also add air feed to the drilling machines.

While some benefits in time savings are expected, the principal reason for the decision was that uniform, controlled feed would result in important savings on drills. Also, while the company's products are similar, they are made in a fairly wide range of metals and the air feed can be adjusted according to metal hardness.

Blows Out Blanks—Another effective application of compressed air is on the company's screw header machines. Every move of

the ram actuates an air valve which opens a jet to blow out blanks. The company found this simple ejection method was more positive than mechanical devices. The installation cost saving was an extra bonus.

Precision finishing requiring high-speed grinding is machine-accomplished by attachment of an air-operated grinder in a fixed position on a lathe. Speeds up to 60,000 rpm are obtained in this way; these are much higher than those obtained with other equipment. The need for costly special equipment for this purpose has been eliminated.

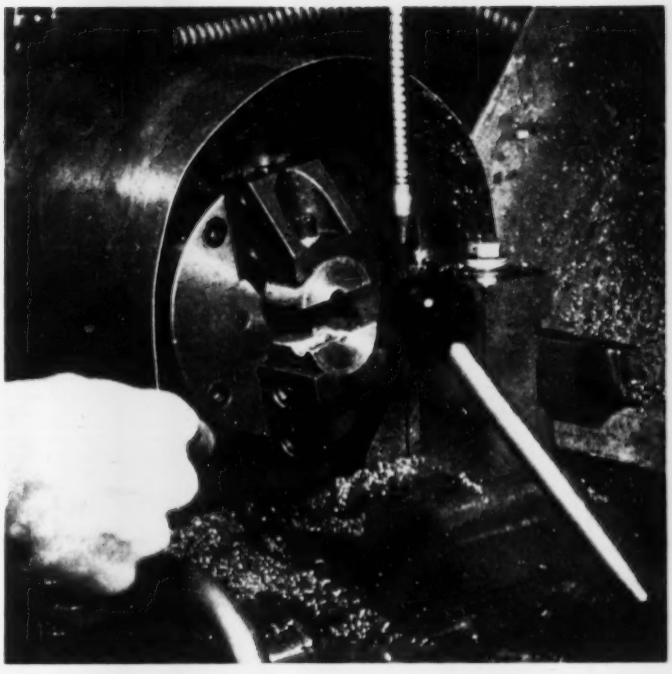
Automatic Chucks—Virtually all the work performed by the company on lathes and other machine tools is on small pieces and short-time cuts, which means that loading and unloading accounts for considerable part of the production time. This cost, however, is reported greatly reduced by equipping all their machines with air chucks.

One piece is out and the next is in and ready in a fraction of the time required when the operator accomplished the loading manually. Furthermore, considerable reduction in worker fatigue has been noticed since changing over to automatic chucks.

Can't Overlook Savings—D. G. Whitehead, one of the partners in Aero Fastener, believes a small company such as his cannot afford to overlook production short-cuts if it wants to sell to air frame builders, who are buying close on products such as fasteners.

Multiply a small single savings by 25, which is the approximate number of employees at Aero, and it does not look so big when compared to multiplication by 250 or 2500 or whatever the number of employees in a larger plant. But Aero believes that the relative savings have enhanced their competitive position.

It is not possible to make an accurate overall estimate of the savings resulting at the Burbank plant, but an approach to estimating benefits gained is found in the fact that a 25 per cent increase in productivity was the estimate given in connection with most of the individual compressed air application described.

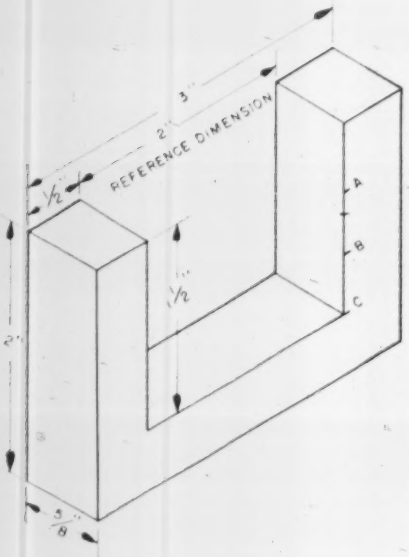


Air chucks on all machine tools cut down loading time, reduce worker fatigue and add greatly to daily output

Vise on this drill press is actuated by the advance movement of spindle and is released as it withdraws

DISTORTION

It Can Be Minimized in Heat Treating



It's still a major problem facing the tool and die maker, even with air-hardening grades of steel and good controlled-atmosphere furnaces. Solution is nearer

By A. L. PRANSES
Supervising Engineer
Westinghouse Electric Corp.
Lima, O.

Fig. 1 — U-shaped sample evaluates effect of residual stresses. A, B and C indicate the machining steps

METALLURGICAL advances in both steel chemistry and heat treating technology during the last several decades have gone a long way toward alleviating the problem of distortion in heat treating. Even with the use of the latest air-hardened steels and the finest controlled-atmosphere furnaces, distortion remains a major problem.

An extensive study was made of the heat treating distortion encountered in the manufacture of molds for industrial plastics. All these molds were made from SAE 3335 steel modified by the addition of 0.20 per cent molybdenum to make it air-hardening.

Prove False Assumption — The results, considered analogous to those encountered with any air-hardening steel, proved false the assumption that air-hardening steels are nondistorting. Parts made from air-hardening steels, though acquiring less distortion than the oil or water hardening types, usually demand greater precision.

The study established that distortion during heat treatment results from four different changes taking place in the metal singly or in conjunction with each other. These are: Bending creep, residual stresses, anisotropic growth and differential transformation.

Bending Creep—People working with metals realize that their strength drops with increasing temperature, yet many fail to realize that the yield strength of most steels is virtually zero at the soaking temperatures used prior to quenching. The result is that expensive dies are often loaded directly on a cracked furnace floor or thoughtlessly placed in trays having warped bottoms.

In other instances, the heat treater may place supports under the die but give little or no consideration to its geometry. In either case, the die is likely to permanently sag under its own weight by flowing plastically in bending creep.

Tests Prove It — Four simple samples, ½ x 2 x 10 inches and made of modified SAE 3335 steel, were placed flat on bar supports 9 inches apart. One sample was left unloaded, while the other three were loaded with various weights at the center of the span. The samples were then charged into a protective atmosphere furnace at 1650° F (the normal austenitizing temperature for this steel), held for 1½ hours, then furnace-cooled to avoid any distortion that might be caused by hardening.

The deviation from flatness was then taken as a measure of distortion due to bending creep. Fig. 2 shows this distortion as a function of calculated extreme fiber stress. Even a very small stress, such as 36 psi on a steel having a nominal yield strength of 90,000 psi at room temperature, will produce the enormous creep of 0.026-inch in the normal heat-treating cycle. Other steels will react differently, but only in degree. In any case, the result will be highly objectionable.

A bit of mathematics will show that the amount of creep is proportional to the square of the length of the unsupported span divided by the height of the beam. Therefore, reducing the free span (by adding intermediate supports) will greatly reduce the creep. Increasing the vertical section (running the work on edge instead of flat) will have the same effect but to a lesser degree. Table I shows the results of mounting, in various positions, a conventional mold side plate ¾ x 4 x 10 inches.

Residual Stresses—Much impor-

tance has been attached to the effect of residual stresses on the distortion encountered during heat treatment. Doubtless, the opening up of bent or deep-drawn objects when exposed to heat have exaggerated the problem.

As a result, it is common practice to apply a stress-relief anneal at a subcritical level (750 to 1300 F) after rough machining and before finish machining and hardening. At these lower temperatures, whatever stresses are present are alleged to dissipate themselves through the process of localized plastic flow.

Evaluate Tool Stock—In the case of tools and dies, however, annealed (fully stress relieved) stock normally is the raw material, and the only stresses in the work at the time it is ready for hardening are those induced by machining operations. To evaluate the effect of these residual stresses, the U-shaped sample shown in Fig. 1 was devised.

On some samples, all machining was done at one shaping operation then the sample was hardened directly. At the other extreme, metal was removed in three easy stages, each followed by a stress-relief anneal; then the samples were hardened. Schedules intermediate between these extremes were also evaluated.

Stress Relieving Risks—All samples were cut with the same relation to the rolling direction in the raw material; and all received their final hardening at the same time. The change in dimension across the mouth of the sample was recorded as the distortion. The results are tabulated in Table II.

The conclusion, based on this data, is that there is little merit in stress relieving tools and dies made from annealed stock at any stage prior to hardening providing the only residual stresses are those induced by the removal of metal by machining. In fact, there may be a measure of risk in so doing.

Anisotropic Growth—Steel hardens by transforming from the austenite phase to the martensite phase. The transformation is accompanied by a net increase in volume that is unavoidable if hardening is desired. If this growth was the same in all directions, it

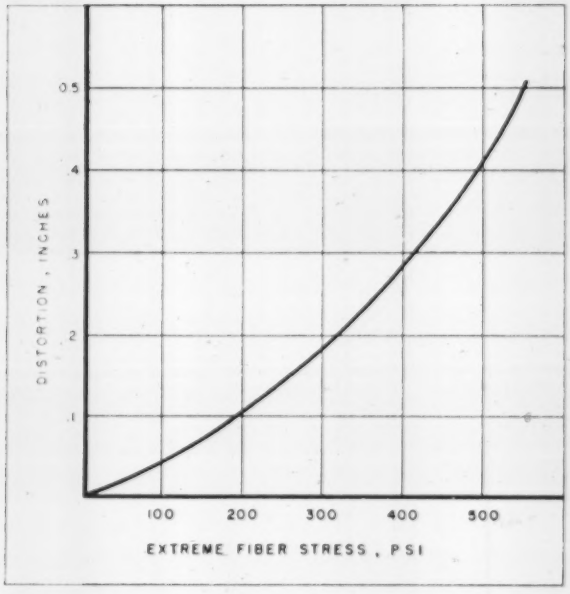


Fig. 2—Curve shows distortion due to bending creep as a function of the calculated extreme fiber stress

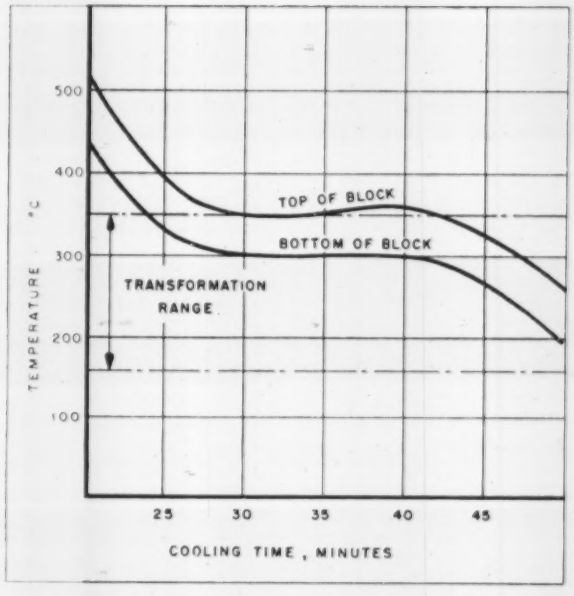


Fig. 3—Cooling curves show that bottom and top surfaces of steel block on floor of atmosphere-controlled furnace begin to transform at different times, thereby introducing distortion through differential transformation

TABLE I

Mounting Method	Calculated Stress, psi	Creep in.
Flat, supports at each end	23.1	0.016
Flat, three evenly spaced supports	1.8	0.001
On edge, supports at each end	4.3	0.003
On edge, three evenly spaced supports	0.3	0.0002

TABLE II

Average change during hardening as a function of the number of prior stress relief anneals.		Average change during hardening as a function of amount of metal removed between last stress relief and hardening.	
None	0.0010"	No metal	0.0025"
One stress relief	0.0025"	0.625 cu. in.	0.0025"
Two stress reliefs	0.0030"	1.250 cu. in.	0.0035"
Three stress reliefs	0.0025"	1.875 cu. in.	0.0010"

TABLE III

Direction	Average Growth, inches/inch
In the rolling direction	0.00045
Parallel to axes of rolls	0.0002
Parallel to line connecting axes of rolls	0.0010

TABLE IV

Method of Mounting	Average Distortion, inches
Flat on bare wire tray	0.0350
Flat on half-inch steel plate	0.0175
Flat on asbestos sheet	0.0200
Flat on three equally-spaced half-inch bars	0.0160
On edge on bare wire tray	0.0070
On edge on half-inch steel plate	0.0035
On edge on asbestos sheet	0.0015
On edge on three equally-spaced half-inch bars	0.0005

would be objectionable but allowances might be made for it in simple dies.

Not Affected by Size—To evaluate this characteristic in our modified SAE 3335 steel, several sample blocks were prepared, half of them 1 x 1½ x 2 inches and the other half 2 x 2½ x 3¼ inches. In each group, the 2-inch dimension was parallel to the rolling direction.

By cutting the blocks so that the longest dimension in the first case and the smallest in the second were parallel to the rolling direction the effect of size was taken into consideration. Growth resulting from heat treatment is shown in Table III. It was not appreciably affected by the size of the block.

Carbide Banding Seen—Annealing after heat treating plus rehardening, although repeated several times on the same blocks, still produced the same amount of growth. This tends to verify the theory that anisotropic growth is associated with carbide banding, which does not appreciably react to thermal treatment.

Since the growth is five times as great in one direction as in another, it is obviously impractical to make allowance for it in machining the die. The only solution lies in upset forging of the die stock where extreme precision is required or where hand finishing after heat treating proves too costly.

Differential Transformation—As explained in the preceding section, expansion accompanies hardening of steels. It is also a known fact that, under given conditions, the formation of martensite (and the expansion) occurs during cooling over a definite temperature range.

If, during quenching, one side of a die cools much faster than the opposite side, the cool side will expand first and bow the die away from the cooling direction. When the opposite side reaches the transformation range, it will be unable to compensate for the previous bowing since the first side is already hard and strong.

Bottom Transforms Early—Fig. 3 shows a portion of the cooling curves obtained with a block of steel 2½ x 3 x 6 inches resting directly on the floor of a water-jacketed, atmosphere-protected cooling chamber. The bottom curve is taken from a thermocouple placed on the side of the block resting on the cooling surface. The top curve represents the readings at the top of the block only 2½ inches away. The bottom surface begins to transform 7 minutes before the top, so it is not surprising that distortion occurs.

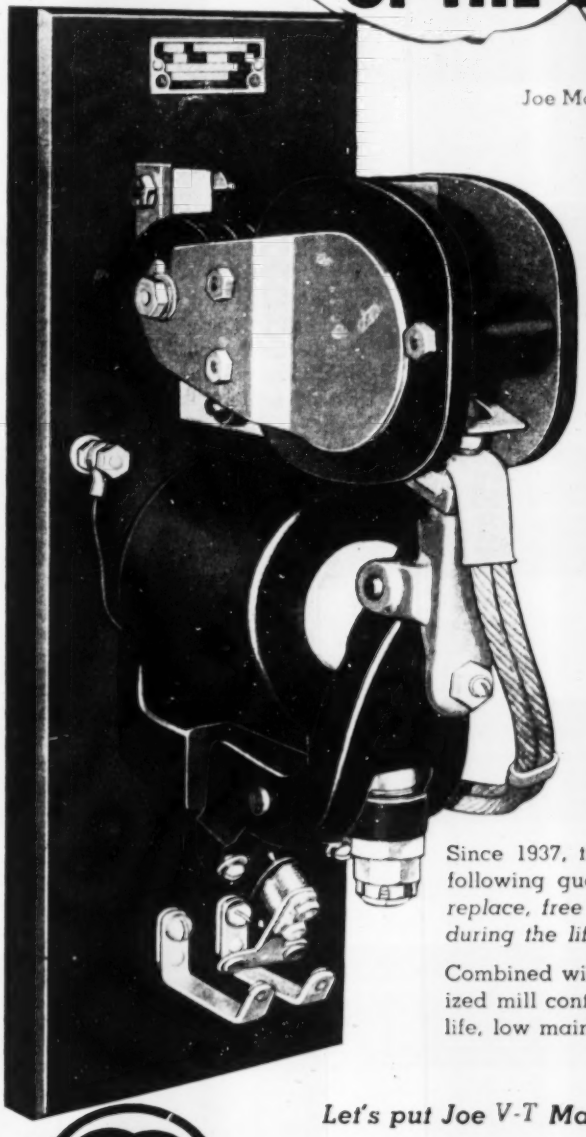
The severity of this distortion was tested by preparing a number of samples ½ x 2 x 10 inches from SAE 3335 steel, mounting them in both flat and edgewise positions with different types of mounting, and hardening them by quenching in the water-jacketed cooling chamber of the Westinghouse Ammogas furnace. The deviation from flatness in a plane parallel to the chamber floor was taken as the measure of distortion. Test results are tabulated in Table IV.

Two conclusions are apparent: Even the slightest separation between work and cooling surface drastically reduces distortion; and providing a larger mechanical section to oppose the bending reduces distortion.

Tips for Heat Treaters—

1. For greatest control, the raw material should be upset forged to homogenize any banded structure, then be fully annealed.
2. Stress relieving at any stage prior to hardening is not warranted and may be actually harmful if only the residual stresses induced by machining are present.
3. Proper mounting of work for austenitizing (soaking) is critical if bending creep is to be avoided. The best method appears to be the use of a number of small bars spaced in relation to the geometry of the piece to provide evenly-distributed support. The supports themselves must be made of materials not likely to sag at high temperatures.
4. When quenching every effort must be made to equalize the cooling rate on all sides of the work.
   a. Pieces quenched in still air should be suspended freely. A metallic support will accelerate cooling, and a nonmetallic support may insulate and retard cooling.
   b. Pieces quenched in an air blast should be spun to equalize the blast effect.
   c. Pieces quenched in a protective-atmosphere cooling chamber should be mounted equidistant from all cooling surfaces. If this is not possible, then the greatest section of the die should be placed normal to the nearest cooling surface.

MEET THE *Joe Magaric* OF THE CONTROL INDUSTRY!



Joe Magaric is the legendary giant of the Steel Industry. He was a fiend for work. In the old country "MAGARIC" meant "MULE"—a good name for Joe. He had the endurance of a mule, and the workhorse ability of one too. His fabulous and incredible activities made him the symbol of power, strength, and high production.

Joe Magaric of the Electrical Control industry is no myth. In countless thousands of applications in mills all over the world, CLARK VARI-TIME CONTACTORS are making records comparable to feats of Joe Magaric.

There are records of millions of operations in the steady 24 hour per day grinds in mills, records of continuous runs in processing lines, records of taking the slam-bang of cranes, open hearth chargers, records in all phases of mill operation, with no downtime—no maintenance. For nearly a quarter of a century the CLARK V-T contactor has been the Joe Magaric of the Electrical Control field. Why is this?

The Joe V-T Magaric Contactor incorporates a hermetically sealed timing device within itself, thus providing a pre-set adjustable time delay before it closes. This eliminates separate timing relays and simplifies wiring.

Since 1937, this hermetically sealed core has carried the following guarantee—*"The Clark Controller Company will replace, free of charge, any core which will fail in service during the lifetime of the controller."*

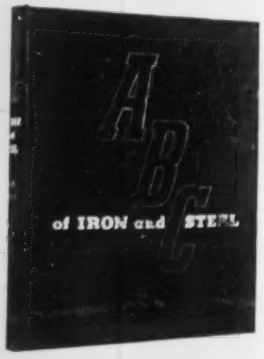
Combined with other CLARK apparatus and CLARK specialized mill control engineering, Joe V-T Magaric provides long life, low maintenance service.

Let's put Joe V-T Magaric to work for you.

THE CLARK CONTROLLER CO.

ENGINEERED ELECTRICAL CONTROL • 1146 EAST 152ND STREET, CLEVELAND 10, OHIO

This book was written by men you know and respect as "tops" in steelmaking . . .



NOW YOU CAN HAVE YOUR OWN COPY!

Why not "cash in" on the know-how and experience of the 31 steelmaking experts who collaborated to make this the most informative book of its kind ever written? Every statement is the result of their actual, first-hand experience . . . the experience of men like

P. L. TIETJEN of J & L
E. C. BARRINGER of ISIS, Inc.
L. F. REINARTZ of Armco
B. H. DeLONG of Carpenter Steel
. . . and 27 other equally distinguished steel men.

You'll like the *A B C of Iron and Steel* because it's current, non-technical, and easy to use in solving your common everyday steelmaking problems.

It's generously illustrated. Each of its more than 400 pages has at least one picture, graph, table or chart to make the story of this dynamic industry more real and understandable.

It's a basic working tool for the experienced steel man and for the beginner as well.

$10 per copy

To get your copy, clip the coupon below, fill in the information requested and mail it today.

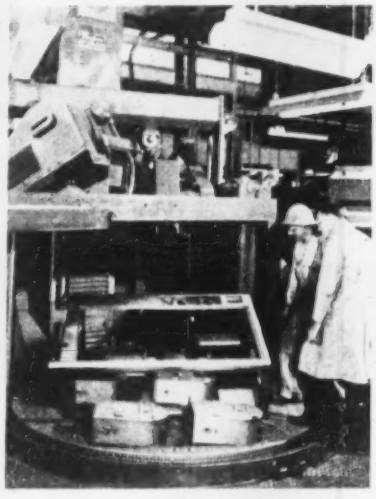
BOOK DEPARTMENT,
PENTON PUBLISHING COMPANY
1213 West Third Street,
Cleveland 13, Ohio
Please send . . . copies of "ABC of Iron and Steel"
Enclosed is $ . . . . . * ☐ Bill me
NAME
ADDRESS
CITY STATE

*Please add 3% sales tax on orders for delivery in Ohio

Peeling Problem Blasted

BLAST CLEANING heads off paint peeling on parts used by Vapor Heating Co. Inc., Chicago, for railroad passenger car heating equipment. The peeling problem is eliminated for such components as those that make up steam generators, blowers and radiators.

In addition, the firm says its 8-foot diameter Pangborn Rotoblast table-room makes cleaning a faster operation and simplifies handling. Result is a substantial reduction in manhours. Extent of timesaving is estimated by the company at 10 manhours from production of each heating unit.



FAST, SMOOTH PARTS CLEANING
. . . good bond prevents paint peel

Make Ready — For each steam generator produced, about 25 parts are made ready for painting by the blast cleaner. The operation must remove weld slag, shop dirt, mill scale and rust to provide a good paint bonding surface.

Typical parts cleaned include large generator control cabinets, blower housings and welded steel coils. Cleaning time approximates 30 seconds for small, thin pieces; 3 minutes for harder-to-clean parts; and 5 minutes for the heat exchanger coils.

Two Coats—These hot and cold-rolled steel parts are painted twice — once before assembly, once after — by a special silicone paint. The company says blast cleaned parts have a sufficiently smooth finish to make a gray first coat of paint almost undistinguishable from unpainted spots for touch-up work. To assure two thorough coats of protective paint, the first coat is now tan, the second gray.

Machine Design Meeting Feb. 2

Because there is a grave danger that specialization in engineering is being overemphasized, the 10th annual machine design conference will get back to fundamentals with all-day sessions on scientific methods in engineering at the Cleveland Engineering Society, Feb. 2.

Seven of the nation's top authorities in technical methodology will cover the various phases and will endeavor to develop an engineering shorthand of basic techniques which will enable others to determine the proper approach to their day-to-day problems.

Discussion will include specific methods to apply dynamic symmetry, research and development, design of special machinery; and the use of models, samples and pilot plant operation. Following each talk there will be a separate session at which interested conferees may direct specific questions to the speaker.

Truck Handles Emergencies

Going into emergency service for the city of Cleveland is a newly designed crash truck of giant proportions. According to its builders, White Motor Co., Cleveland, the truck does everything but think when it goes out on an emergency call. It is an all-purpose disaster unit equipped to meet any emergency requirement.

Primarily a tow truck for extra-heavy towing jobs, it can handle dead weight up to 60 tons. With its two big booms that cover a radius of 170 degrees, and its 36,000 pounds gross weight, it has power to pull down walls, pick up overturned tractor trailers or move freight cars. If an overturned trailer blocks traffic, the truck can lift it back on its wheels and tow it away on a fifth wheel attachment which makes it a trailer.

It is equipped with acetylene cutting torches, hydraulic push-pull equipment of giant size, block and tackle, two-way radio, fire fighting and first aid equipment. It is powered by a 200-hp diesel engine.

self-locking fasteners

Elastic Stop nuts

HEX NUT

SPLINE NUT

HIGH TENSILE NUT

CLINCH NUT

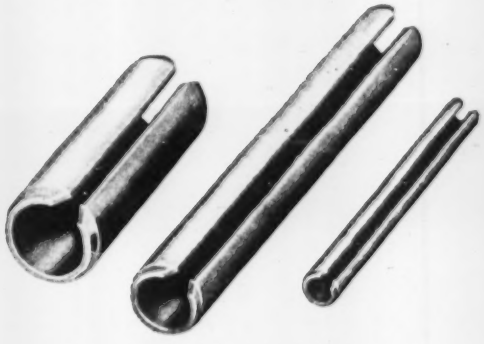
1200° F. HIGH TEMP. NUT

GANG CHANNEL NUTS

FLOATING ANCHOR NUT

Every major aircraft now being assembled relies on the vibration-proof holding power of ELASTIC STOP nuts. Only ESNA manufactures a complete line of all types and sizes of self-locking nuts.

Rollpins



dia. from 1/16" to 1/2"

Rollpins are slotted, tubular steel, pressed-fit pins with chamfered ends. They drive easily into holes drilled to normal tolerances, compressing as driven. Extra assembly steps like hole reaming or peening are eliminated. Rollpins *lock* in place, yet are readily removed with a punch and may be reused.

Cut assembly costs by using Rollpins as set screws, positioning dowels, clevis or hinge pins. Specify them in place of straight, serrated, tapered or cotter type pins.

ESNA

ELASTIC STOP NUT CORPORATION OF AMERICA

ROLLPIN TRADEMARK

Mail Coupon for Design information

Elastic Stop Nut Corporation of America
Dept. N34-260, 2330 Vauxhall Road, Union, N. J.

Please send me the following free fastening information:

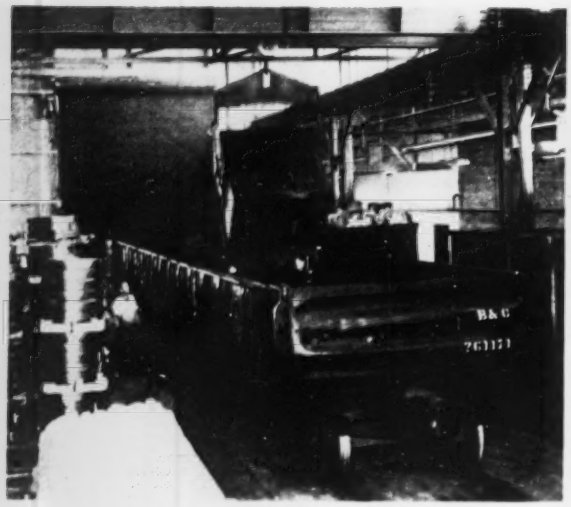
- ☐ Elastic Stop Nut Bulletin
- ☐ Rollpin Bulletin
- ☐ AN-ESNA Conversion Chart
- ☐ Here is a drawing of our product. What fastener would you suggest?

Name _____ Title _____

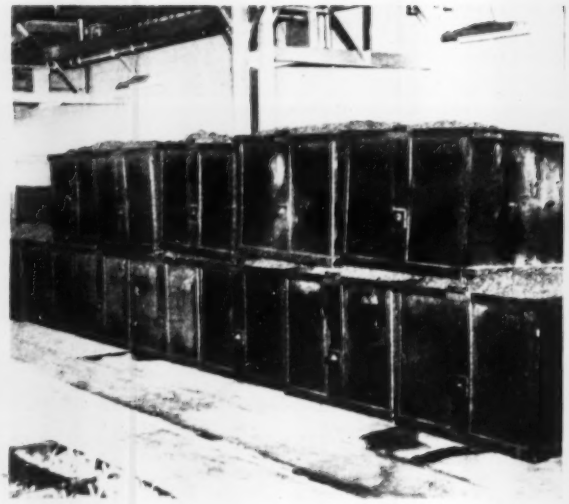
Firm _____

Street _____

City _____ Zone _____ State _____



It takes eight of these bucketfuls of scrap to fill a railroad flatcar. After buckets have been dumped they right themselves. Dump latch is tripped by floor man



When buckets in the pit are full they are lifted out and stacked against the wall near the inside railroad spur. Buckets hold an average of 8000 pounds of scrap

SCRAP: By the Bucketful

This company's answer to the scrap handling problem came with a system of its own design. Large buckets set in a pit cut handling cost to a minimum

HOW WOULD you like to load a railroad car full of scrap in just 35 minutes? This company does it with just two men on the job the craneman and a man on the floor.

Faced with the common problem of getting an increasing amount of scrap out of their plant, Atwood Vacuum Machine Co., Rockford, Ill., looked for a completely new system. The one they finally adopted is one they developed.

No Strain—First they designed and built some buckets which hold about 8000 pounds of steel scrap each. Then, in their new plant, they built pits in the floor which hold these buckets and which bring the top lip of the buckets about flush with the floor.

Fork lift and hand trucks thus dump scrap right into the buckets. There's no lifting or shoveling. Scrap is segregated as it's put in the buckets.

Short Haul—Since most of their scrap is generated in the first operation, it is transported a relatively short distance to shearing equipment for dumping into the pits.

As the buckets become full they are lifted out and empties are put in their places. Buckets are easily handled with a yoke on the overhead crane.

Self-Righting—After they're lifted from the pits the buckets are stacked along the inside railroad spur so they are readily available for dumping into flat cars.

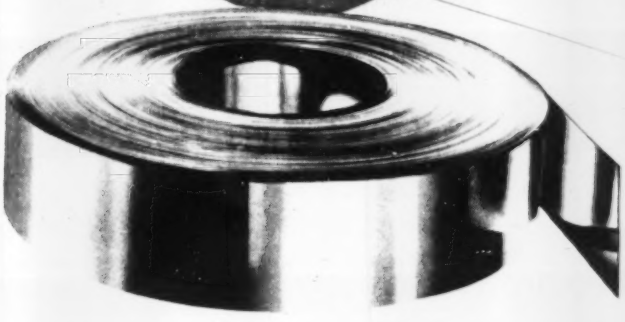
The same yoke on the overhead crane hoists the buckets over the cars. The floor man, who works with the crane, pulls a rope and trips a latch which allows the bucket to upset and dump. The buckets are designed so after they have been dumped they will right themselves.

Shears in the background cut up scrap before it's dumped into the buckets. Scrap is segregated before it's dumped. With the buckets in the pits there's no need for lifting or shoveling

KEEP THESE COSTS

PAINLESS

CMP SPECIFY THINSTEEL STAINLESS cold rolled strip



CMP stainless strip Thinsteel has a reputation for successfully keeping costs in line for fabricators where unusual requirements are paramount.

Particularly in the 300 series stainless grades you can have sizes, finishes, and physical properties not commonly available. As an example, you can specify 18-8 stainless in dead soft temper, with a mirror finish on both sides; or strip with total gauge variation from edge to edge held to less than 25% of standard; or strip as thin as .001", or strip with hi-tensile values well over 200,000# PSI.

If Government Controls or Restrictions force consideration of substitutes for the nickel-bearing 300 series, perhaps we can assist you in developing one of the CMP 400 chromium series as a satisfactory replacement. Type 430, for example, is now commonly substituted for various end uses which formerly involved the 300 series.

So—if you have a difficult stainless strip problem why not check with CMP right now. You'll find prompt and interested attention.

PRECISION COLD ROLLED CMP STRIP STEEL

the Cold Metal Products co.

YOUNGSTOWN 1, OHIO

New York • Chicago • Indianapolis • Detroit • St. Louis • Los Angeles • Cleveland

LOW CARBON, HIGH CARBON (Annealed or Tempered) ***STAINLESS AND ALLOY GRADES, ELECTRO ZINC COATED ARE AVAILABLE FROM:***

THE COLD METAL PRODUCTS CO. of CALIFORNIA, 6600 McKinley Avenue, Los Angeles
Phone: PLeasant 3-1291

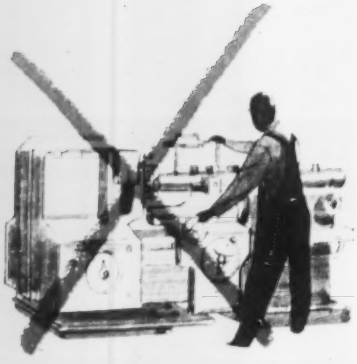
THE KENILWORTH STEEL CO., 750 Boulevard, Kenilworth, New Jersey
Phones: N. Y., COrtlandt 7-2427; N. J., UNionville 2-6900

PRECISION STEEL WAREHOUSE, INC., 4425 W. Kinzie, Chicago • Phone: COlumbus 1-2700

another case

where welded steel tubing does the job best...

From lengths of 2½" ELECTRUNITE Welded Steel Tubing to finished flash-hider being made for the Army Ordnance Corps by Will-o-Hill Industries, Willoughby, Ohio.



Cost Cut 92%!

Electrunite Welded Steel Tubing can run up interesting cost savings for you, too

● These flash-hiders for 20-mm. machine guns were formerly turned out of 3" solid bar stock. Cost was terrific, production rates were low, scrap generation was appalling. In other words, flash-hiders were really being made the hard way.

Using some top-flight native ingenuity, plus lengths of ELECTRUNITE Welded Steel Tubing, 2½" diameter, Will-o-Hill Industries, Inc., Willoughby, Ohio, now make flash-hiders for the Army at a breath-taking fraction of their former cost, and with *no scrap loss*. They are turned out faster, too, with less-skilled help, on low-hourly-cost punch presses, instead of on costly lathes.

ELECTRUNITE Welded Steel Tubing is successfully taking major deformation that even we never dreamed it would stand. What's more, Will-o-Hill report practically no spoiled or rejected pieces.

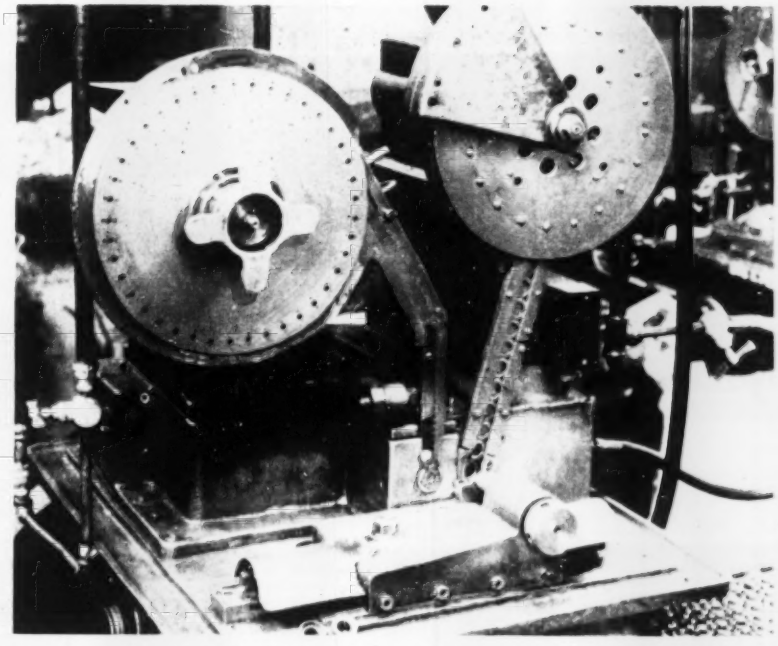
Does this give you ideas about using ELECTRUNITE Welded Steel Tubing in your products . . . to cut material and production costs, speed production, and produce better parts? We'd like to show you what's being done. And help you switch to ELECTRUNITE Welded Steel Tubing.

REPUBLIC STEEL CORPORATION
STEEL AND TUBES DIVISION
224 EAST 131st STREET • CLEVELAND 8, OHIO

Republic

REPUBLIC STEEL

ELECTRUNITE TUBING



Special machine automatically assembles the needles and dust caps to bearings. The bearings also are filled with grease before being removed from the machine. Hopper at left is for needles, the one at right for dust caps

Hopper Feeds Needles to Bearings

Replacing a tedious hand-assembly operation with a semi-automatic machine steps up the production of needle bearings Grease is added in the same operation

By HERBERT CHASE

NEEDLE BEARINGS are often supplied with components separate rather than in assemblies ready for use. This is true, in the case of bearings employed in large quantities in universal joints built by Mechanics Universal Joint Division, Borg-Warner Corp., at its Rockford, Ill., plant.

At one time this assembly was done entirely by hand. It proved too tedious a job for the engineers at a mass-production plant, however, and in co-operation with Rehnberg-Jacobson Mfg. Co., Rockford, they developed a machine to do the job. Several of these machines are now kept busy regularly. They work so well that the latter company obtained a license to build them for general sale.

What It Is — The machine includes a pair of rotating hoppers. Each feeds its own magazine, one with the cylindrical needles and the other with stamped dust caps. Magazines carry these components into recesses where they come into line with a plunger mounted on a carriage arranged on table ways for transverse motion.

Outer races are supplied separately. No inner races are used since the rollers bear directly on the hardened stub shaft when applied to a universal joint. Before needles are placed in an outer race, they feed down the magazine by gravity and with their axes horizontal. Just below the end of the magazine is a retractable horizontal shaft with a diameter the same as that of the shaft on which the bearing is to be used. This shaft is centered in an annular recess the outer wall of which is a retractable tube with a slot at the top to admit the needles.

Nineteen Per—Needles feed into this annulus by gravity until it is completely filled, usually with 19 needles. While this recess is filling, the machine operator loads a race over a shoulder on the carriage plunger.

When the annulus is filled, the operator runs his thumb across the needle ends so they are flush. Then he presses a pedal and the plunger is advanced. This pushes the race into a recess, as the tube around the needles retracts against a spring and the end of the plunger, which is the same size as the shaft, causes the shaft also to retract against a spring. Thus, the race is pushed over the needles and the shaft inside the needles.

Almost Finished—When the operator's foot releases the pedal, the plunger is retracted and the needle and race assembly are withdrawn with the plunger on whose stub end the assembly is supported. It now remains only to apply a dust cap and grease to make the bearing ready for use.

These are applied after the carriage is shifted to the right where the plunger and partly-assembled bearing are brought into line with the second recess, that below the second magazine.

Adds the Cap—In this position, the plunger is advanced to insert the assembly in the recess. There the assembly remains when the plunger is withdrawn. As it is withdrawn, a dust cap drops from the magazine and centers itself in the recess so its boss is in line with the hole in the race. When this occurs a rear plunger is automatically advanced and presses the bearing forward over the dust cap boss, which is a press fit in the race hole.

This motion results in fastening the dust cap permanently in the hole. Excluding dust and other foreign matter, it also serves to retain grease. The grease is injected automatically through a port that is opened momentarily as the rear plunger reaches the end of its stroke.

One Shot—Actually, a supply of grease is kept under continuous pressure but can feed into the bearing only during the short interval when the port remains open. In effect, the port acts to meter the supply, so each bearing receives the same amount.

After the dust cap and grease

New Metal Finishes

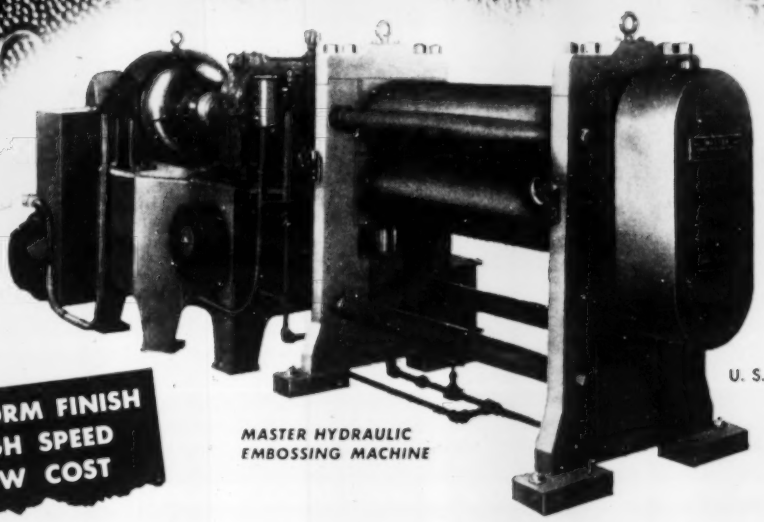
FOR COILED OR SHEET STRIP !

Reproduce Metal Finishes of the "OLD MASTERS" or any "Modern" all-over decorative pattern with this NEW ROTARY HIGH-SPEED METHOD!

"The GREATEST Development in the History of Embossing"

- *Produces a wide variety of prefabricated finishes*
- *Localized embossing and cold rolling in one operation*
- *Makes light gauge metals rigid and stronger*
- *Many installations now in operation*

Meet the METAL World of Tomorrow Ahead of Competition—



UNIFORM FINISH
HIGH SPEED
LOW COST

MASTER HYDRAULIC EMBOSSING MACHINE

U. S. Patent Pending

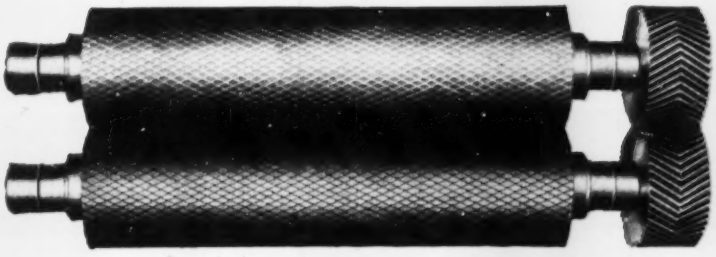
MASTER

Hydraulic

EMBOSSING MACHINE

and

ENGRAVED MATCHED HARDENED FORGED STEEL EMBOSSING ROLLS



ENGRAVED MATCHED HARDENED FORGED STEEL ROLLS

U. S. Patent Pending

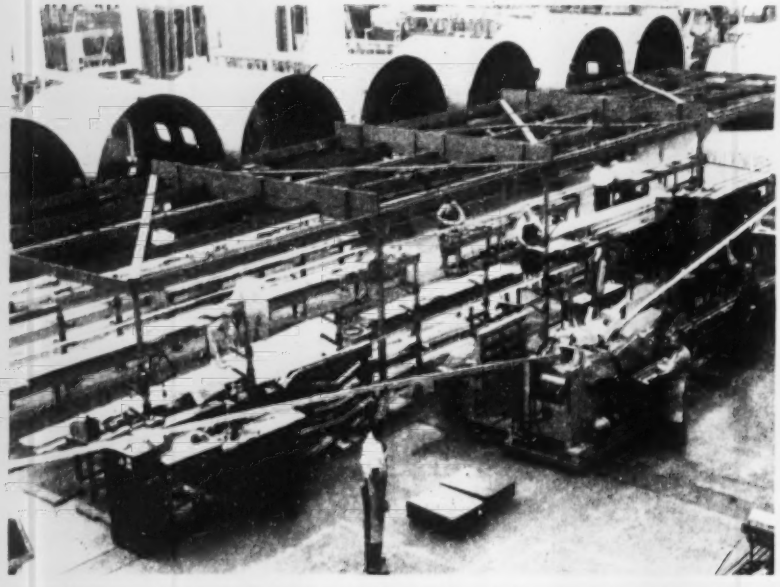
MODERN ENGRAVING & MACHINE CO.

1413 CHESTNUT AVE., HILLSIDE 5, NEW JERSEY

are applied, the bearing assembly is completed, is released and is pushed out of the recess. Then it's placed by hand in a tote box.

Machine operates on a semiautomatic basis. Loading of parts in hoppers and of bearing races and removal of the completed assembly are hand operations. Motions of the carriage and its plunger are by foot. Other operations are automatic. Their timing is controlled by the motions of the carriage and its plunger.

As filling from magazines is much faster than hand filling, the setup saves considerable time. This is especially true as grease is also automatically injected and no separate filling is required.



Wing beam caps, made of high-strength aluminum alloy, are shaped on special bender developed for Lockheed. Machine can handle pieces 60 feet long, producing as much as a 50-degree bend in a 5 x 3½-inch beam easily and accurately

Wing Beam Bending Job Cut to 3 Minutes

Two Hufford-built machines are making fast work of a bending job that formerly took 30 minutes. The machine applies heat up to 325 F at the point of bend

BENDING jobs on high strength aluminum alloy that formerly required 30 minutes are being finished in 3 with a special beam bending machine developed by Lockheed Aircraft Corp. A second advantage credited to the machine is greater bending accuracy. In addition, it requires no special operating skill.

Primary application is found in bending wing beams, but the new machine's capabilities extend to other beam types. It can bend a 5 x 3½-inch 75ST aluminum member up to 50 degrees at 325° F. A rotational control can be adjusted so springback does not warp the bent part out of proper plane.

Only two of the Lockheed-designed machines are in existence, both built by Hufford Machine Works Inc. One unit is installed at Beech Aircraft Co.'s Wichita, Kans., plant for work on Lockheed parts; the second is in operation at Lockheed's Burbank, Calif., plant.

Hot Bending Required—Until the new method was developed, beam caps and other extrusions were bent by blocks and dies. Advent of 75ST material required hot bending, making previous methods impractical. The aircraft manufacturer says its machine's design provides for complete control over the process, including the forming angle, work temperature and temperature of bending dies and springback.

They report only inexpensive inserts need be changed for each different shape. The machine has self-contained hydraulic operating power. Its integral heater platens are regulated automatically for temperature.

Temperature Measurement—Because the amount of springback obtained reflects a difference of plus or minus 2° F, provisions are made to measure temperature of the part while it is clamped in the machine. An equalizer makes jaw elevation symmetrical when bending. In addition, there are adjustable centers of motion for each jaw, plus automatic, adjustable stops for controlling amount of bend.

Another provision makes it possible to rotate the jaws around the beam center line. In this way, dihedral and sweepback angles can be proportioned properly and allowance made for springback in both planes. Bend angle can be checked quickly during the tool try by opening the clamps and using a template while the part is still in the machine.

The machine can pull backward to correct a beam inadvertently overbent during initial adjustment. It can also remove twist warpage which sometimes occurs in machined or extruded parts.

Dimensions—Bending speed is adjustable and all functions are controlled by pushbuttons on the control stand. The machine is 48 inches wide, about 92 inches high and 100 inches long. Center line of the beam floor level is 50¾ inches.

Rack-Type Plating Illustrated

Automatic rack-type plating equipment made by Frederic B. Stevens Inc. is described and illustrated in a bulletin prepared by the company. The folder also illustrates many special applications these machines are capable of handling. Copies of bulletin No. 61 are available free from the company, Detroit 16.

Alive with
action
Complete Production and Engineering Facilities at each plant —
WALLACE BARNES COMPANY
BRISTOL, CONNECTICUT
THE WILLIAM D. GIBSON COMPANY
1800 CLYBOURN AVE. CHICAGO 14.
RAYMOND Manufacturing COMPANY
CORRY, PENNSYLVANIA
BARNES-GIBSON-RAYMOND
40300 PLYMOUTH RD. PLYMOUTH, MICH.
B-G-R COOK PLANT
ANN ARBOR MICHIGAN
F. N. MANROSS AND SONS CO.
BRISTOL CONNECTICUT
OHIO DIVISION
1712 EAST FIRST ST. DAYTON, OHIO
DUNBAR BROTHERS COMPANY
BRISTOL, CONN.
MILWAUKEE DIVISION
341 E. ERIE ST. MILWAUKEE, WIS.
SEABOARD Coil Spring Div.
435 E. WASHINGTON BLVD. LOS ANGELES 15,
top 10 SOURCES for Mechanical Springs
IN CANADA - The WALLACE BARNES CO., Ltd.,
o DIVISIONS OF ASSOCIATED SPRING CORPORATION

New Vistas Opened for Metals

Warm working at temperatures of 300 to 650 F affords control of texture and improvement of physicals with and across the grain of flat material

By NORMAN P. GOSS
Consultant
Cleveland

TEMPERATURE at which a metal is deformed as by rolling, drawing, etc., profoundly effects the orientation texture. When metals are deformed at room temperature, the operation is referred to as cold working; when carried out in the range of 300 to 650° F, it is referred to as warm working. X-ray diffraction studies made on low-carbon strip steels, rolled over a wide range of temperatures, showed that the orientation textures were temperature sensitive. When low-carbon strip steel was deformed or "warm rolled" at 400 to 500° F, a nearly random orientation of the grain fragments resulted.

Within this temperature range, two orientation textures exist simultaneously, and the transition from one orientation texture to the other while the metal is being deformed produces the random-like structure. Where low-carbon strip steel was rolled at 700° F, a new orientation texture was found. This has been called the "warm rolling" texture to distinguish it from the well known cold rolling orientation texture formed at room temperature.

Leads To New Textures—This discovery opens up new possibilities in the field of plastic deformation of metals, i.e. the warm working technique. It is well known that different slip systems operate at different temperatures, and this is true for nearly all metals. By controlling the rolling temperature, one can develop in the metal a wide range of orientation intensity textures; or if required a texture which is subsequently a random one.

This new warm rolling technique can be applied to many of the nonferrous metals which do not have an allotropic transformation to counteract the effects of orientation when such metals are subjected to drastic deformations without intermediate heat treatments.

By taking advantage of the orientation textures, which can be developed at various temperatures, one can control the intensity of the preferred orientation. Or if desired a random orientation can be developed by taking advantage of the different orientation textures which develop over the warm rolling range.

Another important fact revealed by these experiments on the warm rolling of metals, was the tremendous increase in the intensity of the preferred orientation when the low-carbon steel was rolled below room temperature. The lower the room temperature the more perfect the orientation texture.

Affords Control—The recrystalization texture of metals can now be controlled by taking advantage of the "warm working" method. This will be especially important in deep drawing operations in which plastic flow is not the same in all directions.

In the case of tin plate and autobody strip steel, etc., it will now be possible to control the orientaton texture so that the physicals with and across the grain will be improved, and controlled. Controlled warm rolling of 18-8 steel will result in less gamma iron being transformed during the rolling or wire drawing operation. Bolt wire, cold heading stock, also can be improved by warm drawing techniques.

Lehigh To Get Largest Tester

Plans for the building to house one of the world's largest vertical universal testing machines at Lehigh University were announced recently at a technical meeting of the Iron and Steel Institute in Philadelphia.

Total cost of new equipment and building, expected to be ready for the opening of the academic year starting September 1954, is estimated at $1.2 million. The seven-story brick building will be 130 feet long, 70 feet wide. An 18-foot pit, 20 x 30 feet, will be located in the middle area under the laboratory. A 4-foot reinforced concrete slab will extend over most of the floor area to support long girders.

In addition to housing the 5,000,000 pound capacity hydraulic tension-compression machine, to be constructed at an estimated cost of $400,000, the building will house five laboratories, a library, conference room, two seminar rooms, an elevator, and 21 offices.

Heavy Press Work Flourishes

Five hydraulic die-forging and extrusion presses are under design and construction by United Engineering & Foundry Co., Pittsburgh, as a part of the Air Force heavy press expansion program. The firm reports it is building 110,000 tons, or slightly more than 25 per cent of the 400,000 tons' capacity comprising the program.

United's part consists of two 35,000-ton and one 8000-ton forging press, one 12,000-ton and one 20,000-ton extrusion press. The company says the latter, with over-all length of 290 feet will be the largest press of its kind in the world.

The eight-column, 35,000-ton die-forging presses will be 71 feet high—51 feet above floor level—and weigh 10 million pounds each, plus 3 million pounds of auxiliary equipment. Castings weighing 450,000 pounds will be required in their construction and 200,000-pound forgings will form each column of the press.

New Surface Preparation Specs

Series of nine surface preparation specifications has been issued by Steel Structures Painting Council, Pittsburgh. The new specs cover solvent, hand and power tool cleaning; flame cleaning new steel; blast cleaning to white metal; commercial blast cleaning; brush-off blast cleaning; pickling; and weathering and cleaning.

The entire series can be obtained for $1 from the council, 4400 Pittsburgh 13.

Here's Proof

The New Thompson Type 2F is a SUPER PRECISION Tool Room Grinder

When working to a tolerance of four millionths of an inch such as is observed when making Webber Gage Blocks, the rough or preliminary grinding plays an important role in keeping cost of the final finishing within reasonable limits.

WEBBER GAGE COMPANY
12900 TWINSETT ROAD CLEVELAND 11 OHIO

November 10, 1950

Mr. Wilson, Vice President
Thompson Grinder Company
Springfield, Ohio

Dear Mr. Wilson:

We recently installed a new THOMPSON Tool Room grinder to grind Gage Blocks to our specifications and tolerances. The results have been very satisfactory. In spite of the close limits to which the work has to be done. We thought you would be interested in the performance of this machine.

Very truly yours,
WEBBER GAGE COMPANY
Geo. E. Webber

Thompson 2F Grinder Photographed in the Webber Gage Co., Cleveland Plant

COMPARE THIS NEW 8 x 10 x 24 TOOL ROOM GRINDER

Compare These Features:

- HARDENED AND GROUND cross slide ways completely sealed.
- One shot lubrication to cross slide ways and internal saddle bearings.
- HARDENED AND GROUND sealed anti-friction vertical slide.
- HARDENED AND GROUND BED WAYS with automatic lubrication.
- 5600-1800 R.P.M. 2 speed wheel head. Heavy alloy steel spindle heat treated, runs in super precision ball bearings accurately preloaded, lifetime lubricated.

Handy control panel.

- Elevation micrometer stop graduated to .0001"
- GROUND THREAD FEED SCREW.
- Automatic wheel TRUING device.
- Longitudinal hand wheel with automatic engagement.
- Hydraulic head movement throttle with rapid traverse.
- Hydraulic table movement throttle.
- Elevating hand wheel graduated to .0005"
- GROUND THREAD FEED SCREW.

WRITE TODAY for complete specifications and performance data. Address Dept. 16, Thompson Grinder Co., Springfield, Ohio.

The only manufacturer of a complete range of heavy duty and light duty surface and contour grinders for industry.

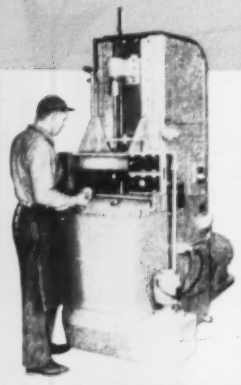
Thompson SURFACE Grinders

The Thompson Grinder Company, Springfield, Ohio

three steps

to lower broaching costs

the American way



1

AN American MACHINE

American engineers design and build more than 50 models for surface and internal broaching. One of these standard models is probably the *right* model to speed your production, and lower your broaching costs. However, if yours is a special broaching problem, American can build you a special machine to beat that problem. Production bottlenecks are easily solved by American experience.

2

AN American BROACH

American broaches are designed with the same skill used on American machines. We know the demands placed on broaching tools by machines and we build accuracy and durability into every American tool. They maintain closer tolerances, and last longer because they are built the American Way.

3

AN American FIXTURE

Excessive handling of the part being broached costs you money. To get the most from your machine and your broaching tools you need a fixture to properly hold and handle the part during the broaching operation.

Because American builds all three — machines, broaches, and fixtures — we have the know-how to get the most from every fixture, every tool, every machine.

WANT TO KNOW MORE ABOUT THE AMERICAN WAY OF LOWERING BROACHING COSTS

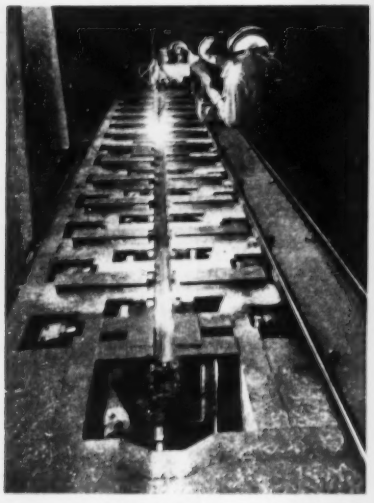
Send for American Broach Catalog #450, 32 pages of useful information on American products that solve broaching needs. Or if you have a special broaching problem in your plant, just send a part print or sample and hourly requirements for our engineers' specific answer. Address Dept. S. No obligation of course.

American BROACH & MACHINE CO.

A DIVISION OF SUNDSTRAND MACHINE TOOL CO.

American Building - Ann Arbor, Michigan

SUNDSTRAND



Seam Welding: 100 ipm

Air Reduction Co.'s Aircomat'c welding head is used here by S. J. Thorn Co., Philadelphia, to weld 15-foot seams in 3/16-inch thick aluminum at 100 ipm. The 3/32-inch diameter f l-ler wire is supplied from a mechanical wire feed unit. Because helium shielding gas affords sufficient protection, no need for flux is reported

Attachments Expand Truck Uses

Increasing efficiency of powered industrial trucks is the theme of a booklet offered by Elwell-Parker Electric Co., Cleveland. According to the manufacturer, use of various specially-designed attachments enables one truck to do the job of many, increasing economy of operation and broadening applications.

More than 25 attachments are illustrated and described. Each type is pictured and accompanied by detailed text of design and applications. Booklet is designed for quick, easy reference by handling engineers, production personnel, supervisors and purchasing agents.

Machine Drills Tank Housings

Special machine for drilling and reaming tank suspension support housings has been developed by Cross Co., Detroit. Housings are made of cast armor material with Rockwell hardness C42.

The machine drills 4-inch diameter holes at a rate of 11 pieces per hour. Parts are held on a fluid, motor-driven index table with four stations. First station is designed for loading and unloading, the second for drilling, the third for flat

Extra Hook Clearance

This monorail-type crane with 10-ton hoist-carrier mounted between the two bridges offers considerable extra hook clearance for profitable use of storage area. A development of American Monorail Co., Cleveland, the setup has another advantage in possible long-span application. Suspended pushbutton station exerts control

bottom drilling, the fourth for reaming. One unskilled operator is required.

A contribution to reduced downtime is use of preset tools to permit quick replacement. Hydraulic and electrical construction is made to J.I.C. standards. Other features include hardened and ground ways, hydraulic feed and rapid traverse, and automatic gravity-operated cam clamping for the index table.

Dieing Machine Line Described

Specifications for its line of high-speed automatic dieing machines, including features essential for production of stampings by the progressive die method, are available in a 60-page brochure from Henry & Wright Division, Emhart Mfg. Co., Hartford, Conn. Machines covered range from 25 to 400 tons capacity.

Various production stages from raw stock to finished part are illustrated for 25 typical parts. Related and accessory equipment, plus special automatic steel presses of single and double crank straight sided types and steel knuckle joint presses are also described. The brochure can be obtained free by request on company letterhead.

Sure Cure for a CUTTING HEADACHE

If you have a cutting headache, caused by tool failure, take this three-way cure:

(1) Use Kennametal cemented carbide . . .

(2) in tooling designed by our engineers who know carbides from the ground floor up . . .

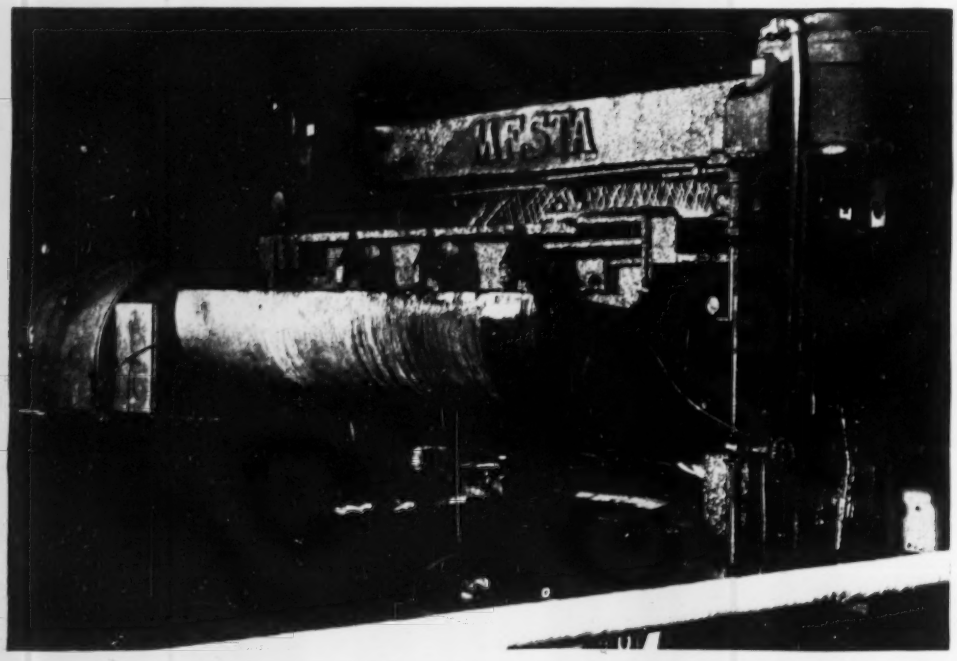
(3) applied with the help of our field engineers whose aggregate experience is greater than that of any other carbide tool manufacturer.

This cure is working in thousands of shops—handling jobs which no other tools can do. But, even if you don't have a cutting headache, consider this important point:

Tooling that takes tough jobs in stride is the kind to use, also, on routine jobs where floor-to-floor time and overall cost-per-piece must be determined with accuracy, and maintained.

That tooling is Kennametal. Let us prove it in your shop. Kennametal Inc., Latrobe, Pa.

KENNAMETAL
CEMENTED CARBIDE TOOLING
THAT INCREASES PRODUCTIVITY



Bearings greased with lithium base grease have functioned in this pinch roll with as much as 51 per cent water when the seal was accidentally broken

Better Lubrication Boosts Production

Lithium base grease used on almost half of lubrication points in hot strip mill. High water tolerance provides safety factor where there is an unusual water hazard

By A. D. BINZ
Chief Lubrication Engineer
Hot Strip Mill Division
Pittsburgh Works
Jones & Laughlin Steel Corp.

PROBABLY the greatest volume user of lubricating grease, from the raw materials stage to the finshed products, is the steel industry. And, without a doubt, it demands the most in grease performance.

The unusual severity of steel processing operations, for instance, is the most exacting measure of a grease's mechanical stability and its resistance to breakdown, and is the cause of most grease failure in the industry.

A Solution?—In an effort to improve lubrication practice and maintain peak productivity in the hot strip mill of the Pittsburgh Works, we surveyed available greases about three years ago and decided that a multipurpose grease of the lithium base type might solve our problems.

Grease failure on the run-out tables can be most costly, both from the standpoint of downtime and product contamination through progressive failure and dripping of grease. An excess of friction or temporary bearing seizure can cause scratching and cobbling of the steel strip, with costly and sometimes disastrous results.

First Tests Good—Results of a 1000-hour test, using lithium 12-hydroxy stearate grease on a selected number of rolls, showed that this type of grease performed satisfactorily. It was unaffected by existing hazards and remained soft and pliable throughout the test.

Further experience has more than justified the test results and today, this grease is used on all electric motors, overhead cranes and coil conveyors, in addition to the driven rolls of the mill run-out tables. Actually, this grease is now used on 3000 of the 7000 overall lubrication points in the mill, and has reduced the number of greases stocked from 17 to 10 brands and types.

Good Pumpability—On the two run-out tables, A and B, A has 500 points of lubrication and B has about 1180 points. Two heavy-duty, end-of-line, automatic systems of 100 pound capacity each, deliver grease to the roller bearings as the strip is rolled at speeds up to 1850 fpm.

Getting grease out to this many bearings was no problem, but the 600 feet of traverse through 2-inch main supply lines required a grease of excellent pumpability

"THAT'S OUR STEEL STOCKROOM"

The gentleman is referring to the Carpenter Mill-Branch Warehouse in his locality. Have you ever thought about making your nearest Carpenter Warehouse *your* steel stockroom, too?

When you do, you'll make the profitable discovery that your Carpenter Mill-Branch Warehouse is not only stocked with tool, alloy and stainless steels... but puts at your command one of the most comprehensive services on steel ever devised.

And *every* service is designed to free you from more of your steel problems... lets you concentrate on your one important job of making *more* and *better* products at a lower unit cost.

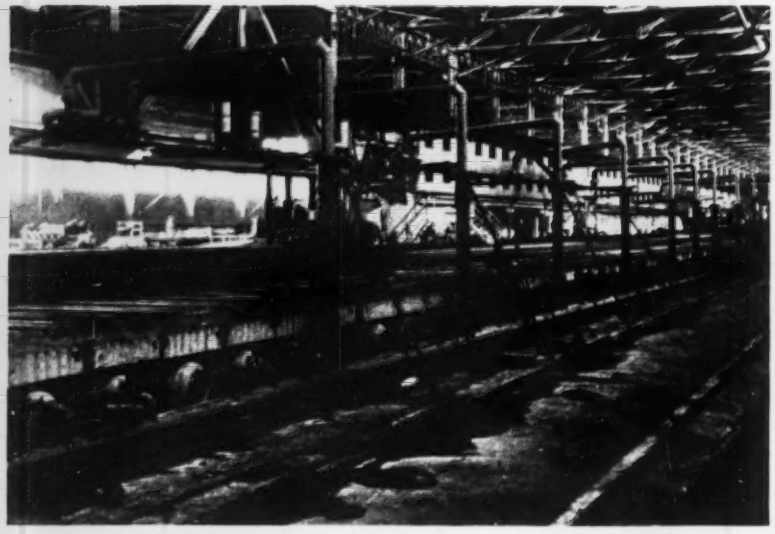
There's the man on the warehouse order desk ready to give quick information on sizes, prices and grades. There's professional in-the-shop help on tooling and production problems... service literature to help you get the most from every pound of steel you use... as well as Metallurgical Counsel available to you direct from the Reading Mill.

Give your nearest Carpenter Mill-Branch Warehouse or Distributor a chance to prove how this comprehensive Mill-Branch Warehouse Service can pay off for you. Simply pick up your phone, call the number and be ready for action! The Carpenter Steel Co., 139 West Bern St., Reading, Pa.

Carpenter

Mill-Branch Warehouse Service

SPECIALTY TOOL • ALLOY and STAINLESS STEELS



Motors and bearings on hot strip run-out table are lubricated with lithium base product. Top and bottom water sprayers intensify greasing hazards

over a relatively wide range of temperature. It is significant that since switching to this multipurpose grease we have been able to reduce the line pressure from 1500 to 1000 psi and still cover the 600 feet without freezing or carbonization of the grease in the more remote flexible hose connections to the bearings.

Saves Grease Too—System feeding table A, which is constantly running, pumps grease continuously and feeds grease every 20 minutes from the measuring vaives. Table B, on which plate is usually run out, is fed every 30 minutes.

Records on grease performance during the three years since we specified this multipurpose product show that our grease consumption on the run-out tables has been cut in half. In addition to this, life of the roller bearings on the rolls has been increased by about 90 per cent. Previously, 12 to 15 rolls had to be changed every week, but now we change on the average of one a week and a bearing lasts from a year to a year and a half instead of six months.

Hazards Are Severe—The 4-high 96-inch hot-strip mill necessarily runs at peak speeds to meet urgent production demands, thus increasing the severity of operation, shock loading and the costliness of breakdown. And the additional hazards of water, heat and variation in temperature, from 125 to 350 F, are imposed on the lubricant.

The automatic coiler, using fast motors for pull-up, and subjected to unusual hazards of heavy, sudden shock load, heat and water is also lubricated with this multipurpose grease, the motors being greased with pressure guns. The high mechanical stability of this grease makes it ideal for extended period lubrication of all motors.

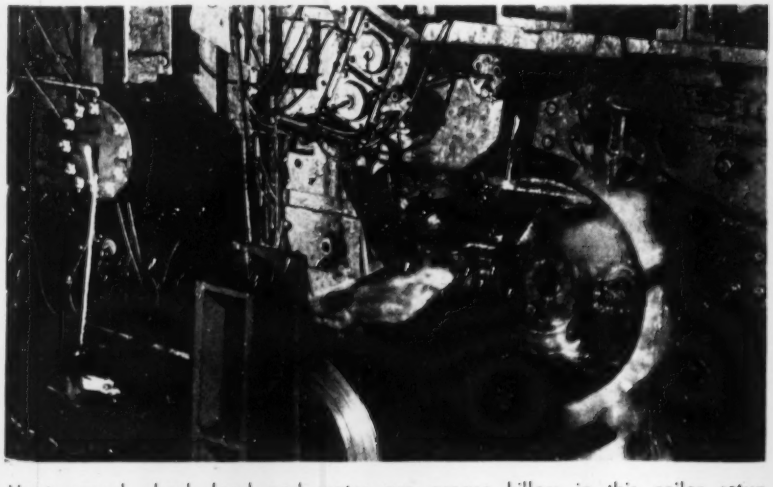
High Water Tolerance—A recent experience on the pinch roll unit, on which the lower roll is constantly driven, illustrated the fact that this type of lithium grease possesses a high degree of water tolerance.

A break in the seal had exposed the bearing to water entry and, although the bearing appeared to be functioning perfectly, it was taken out for lab inspection and testing as a precautionary measure. It was discovered that about 51 per cent water was present in the grease and, despite this, the lab rating showed the grease to have a 389 unworked, and a 405 worked consistency. It is believed that this property of water tolerance is more significant to good grease performance than water resistance alone, and provides an excellent safety factor when unusual water hazard is unavoidable.

Good On Conveyors — Another area of critical lubrication requirement most efficiently served by multipurpose grease of this type is coil conveying, where 95 flat-buggy conveyors feed from the coiler to the finishing and shipping departments. Here again, the hazards of heat, water, shock loading and dead load (each coil weighs from 2 to 3 tons) call for a grease of multipurpose characteristics.

There are 12 grease points on each buggy and it is difficult to reach them manually without affecting production schedules. It is therefore essential that the grease should resist breakdown and enable relubrication periods to be substantially extended. With this type of grease, the relubrication periods have been extended threefold with consequent grease savings.

In three years experience with this type of lithium base grease the savings obtained in grease con-



Heat, speed, shock load and water are grease killers in this coiler setup

Looking for something special?

J&L provides you with Cold Finished Steel that's—

CARBON RESTORED . . . ANNEALED
NORMALIZED . . . BRIGHT ANNEALED

Our cold finishing bar mills now include a modern controlled atmosphere furnace for the thermal treatment of cold finished steel. This latest addition to Jones & Laughlin Steel Corporation facilities can mean cash in the till for *you* . . . cash that's measured in terms of cold finished bars that lower production costs, increase output and assure top-flight quality in the finished products you are producing.

Why not get in touch with J&L *today?* We'll be glad to provide detailed information relating to your specific needs. Our contact metallurgists are available to work *with* you to determine how *you* can use these special J&L cold finished steels to gain the advantages of improved machinability, exact mechanical properties, increased ductility, or elimination of the necessity to remove "decarbed" surfaces.

JONES & LAUGHLIN STEEL CORPORATION, PITTSBURGH, PA.

FILL IN THE COUPON NOW!

Jones & Laughlin Steel Corporation
404 Gateway Center, Pittsburgh 30, Pa.

☐ Without obligation please send me your booklet "Extra Services to Users of Cold Finished Steel."
☐ Please have your representative call.

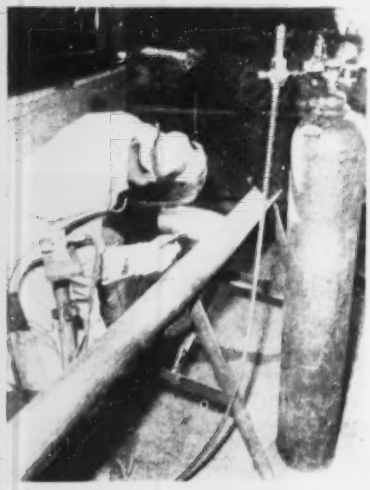
Name
Title
Company
Address

sumption reduced downtime, bearing cost, purchasing and less interrupted production is evidence of its practicality in strip mill operation. And, because it has eliminated a number of greases the chances of costly misapplication are practically eliminated.

Piping Hot Caustic Soda

DIFFICULTIES in transporting hot caustic soda solutions will be surmounted by one chemical manufacturer by use of a 10,000-foot long wrought nickel piping system.

Fabricated by Gulf Coast Fabricating Co., Houston, the system will carry solutions at temperatures



WROUGHT NICKEL SYSTEM
. . . Heliarc welded in fabrication

around 600 F. Corrosion resistance properties of nickel make it excellent in this application. Even at these high temperatures, nickel corrosion rate by caustic soda is less than 0.020-inch per year.

Techniques—More than 2700 feet of Heliarc welding is done on the entire operation. Although pipe and fittings vary in diameter from $1\frac{1}{4}$-inches to 4 inches, with wall thicknesses ranging from $\frac{1}{8}$ to 3.8-inches, all welds are made easily.

Edge preparation for the joints varies. Some joints are hand-ground to a 45-degree included angle, others to a sharper angle with a 1/32-inch root face. Two passes are used on all joints. The first is made without filler rod to obtain uniform underbead. In the second pass, nickel welding rod is used.

Welding current is direct-current straight polarity, about 100 amp. An argon gas flow of approximately 10 liters per minute is used.

Electric Load Protection

One problem the light metal industry must face when higher power is used in electrolytic reduction will be protection of electrical apparatus when dropping potline load from ignitron rectifiers. Best means of protecting this equipment is by alternating current circuit breaker operation with auxiliary power maintained, according to an investigation made at the Mead, Wash., works of Kaiser Aluminum & Chemical Corp.

The report was made by S. J. Pope, of Kaiser, and J. K. Dillard and C. R. Marcum, Westinghouse Electric Corp., E. Pittsburgh, Pa., at the winter general meeting of the American Institute of Electrical Engineers in New York. The investigation was undertaken to get fundamental data on current and voltage surges in large ignitron rectifier installations.

Three Methods — Records were made when the potline was tripped off by alternating current circuit breaker operation, by automatic phase-back to reduce potline voltage to approach polarization value, followed by tripping cathode circuit breakers, and by tripping all cathode breakers simultaneously.

In the favored alternating current breaker method, the engineers reported no serious transient disturbances were observed in either secondary phase or cathode currents. Tripping of the primary power supply removed any tendency to unbalance currents between parallel rectifiers.

Hydraulics Proceedings Ready

Technical papers presented at the eighth annual meeting of National Conference on Industrial Hydraulics have been published as the proceedings of the conference. Lists of registrants, officers and committees are included, as well as illustrations and texts of the papers presented Sept. 4-5 in Chicago.

The conference is sponsored each year by the graduate school of Illinois Institute of Technology and by Armour Research Foundation of the institute.

CALENDAR
OF MEETINGS

January 26-28, Truck-Trailer Manufacturers Association Inc.: Annual winter meeting, Edgewater Gulf hotel, Edgewater Park, Miss. Association address: 1024 National Press Bldg., Washington. Managing director: John B. Hulse.

January 26-30, American Society of Heating & Ventilating Engineers: International heating & ventilating exposition, Grand Central Palace, New York. Society address: 51 Madison Ave., New York 10. Secretary: A. V. Hutchinson.

February 1-5, Associated Equipment Distributors: Annual meeting, Hotel Conrad Hilton, Chicago. Association address: 30 E. Cedar St., Chicago. Secretary: P. D. Hermann.

February 2, Cleveland Engineering Society: Annual machine design conference, society offices, 2136 E. 19th St., Cleveland 15. Information: Don Cornish.

February 4-6, Computor Conference Committee, Institute of Radio Engineers and American Institute of Electrical Engineers: Western computor conference, Hotel Statler, Los Angeles. Information: G. H. West, Public Relations Dept., Consolidated Engineering Corp., Pasadena 8, Calif.

February 9-11, American Road Builders' Association: Annual meeting, Hotel Statler, Boston. Association address: 1319 F St. NW, Washington 4. Secretary: Gen. Eugene Reybold.

February 15-19, Automotive Electric Association: Annual meeting, Edgewater Beach hotel, Chicago. Association address: 502 Michigan Bldg., Detroit 26. Secretary: S. W. Potter.

February 16-19, American Institute of Mining & Metallurgical Engineers: Annual meeting, Hotel Statler, Los Angeles. Institute address: 29 W. 39th St., New York 18. Secretary: E. H. Robie.

February 16-19, Industrial Ventilation Conference: Michigan State College, E. Lansing, Mich., Co-sponsor: Division of Industrial Health, Michigan Dept. of Health. Information: K. E. Robinson, Division of Industrial Health, Lansing 4.

February 18-20, Society of the Plastics Industry Inc.: Annual reinforced plastics conference, Shoreham hotel, Washington. Society address: 67 W. 44th St., New York 36. Executive vice president: William T. Cruse.

March 2-6, American Society for Testing Materials: Spring meeting, Hotel Statler, Detroit. Society address: 1916 Race St., Philadelphia. Secretary: Robert J. Painter.

March 2-6, Pittsburgh Section, American Chemical Society and Spectroscopy Society of Pittsburgh: Pittsburgh conference on analytical chemistry and applied spectroscopy, Hotel William Penn, Pittsburgh. Information: L. E. Pitzer, U. S. Steel Co., 525 Wm Penn Place, Pittsburgh 30.

March 3-5, Society of Automotive Engineers: National passenger car, body and materials meeting, Hotel Sheraton-Cadillac, Detroit. Society address: 29 W. 39th St., New York 18. Secretary: John A. C. Warner.

March 6, Bituminous Coal Research Inc.: Annual meeting, Netherland Plaza hotel, Cincinnati. Institute address: 2600 First National Bank Bldg., Pittsburgh 22. Secretary: C. A. Reed.

March 8-11, American Institute of Chemical Engineers: Annual spring meeting, Hotel Buena Vista, Biloxi, Miss. Institute address: 120 E. 41st St., New York 17. Secretary: Stephen L. Tyler.

March 11, Foundry Education Foundation: Annual meeting and technical, university & industry advisory committee conference, Hotel Cleveland, Cleveland. Foundation address: Terminal Tower, Cleveland 13. Executive director: George K. Dreher.

March 11-12, Society of the Plastics Industry Inc.: Annual Canadian conference, General Brock hotel, Niagara Falls, Canada. Society address: 67 W. 44th St., New York 36. Executive vice president: William T. Cruse.

a compact, complete small mill. No cellars or elaborate foundations needed

TO meet the need of many manufacturers for a small, compact, inexpensive mill for the cold rolling of narrow, thin strip, UNITED developed, and is now offering, a NEW, COMPLETELY INTEGRATED "PACKAGE MILL."

Each unit is furnished fully equipped with roller bearing mounted rolls, recirculating rolling coolant system, mill guides, tension reels, belt wrappers if desired, strippers, motors and drives, all mounted on a fabricated base which serves also as a rolling coolant reservoir. The mill illustrated is a reversing type with motorized screwdown.

If a small, compact, completely self-contained "Package Mill" of this type fits into your present operations or contemplated expansion, consult us. Your inquiry will bring complete information at no obligation.

- Mill can be equipped for one way rolling by using a simple coil box instead of a reel.
- Sleeve type or collapsing mandrels are optional with or without grippers to meet user's requirements.
- Hand screwdown can be furnished instead of motorized screwdown as shown.

UNITED ENGINEERING AND FOUNDRY COMPANY

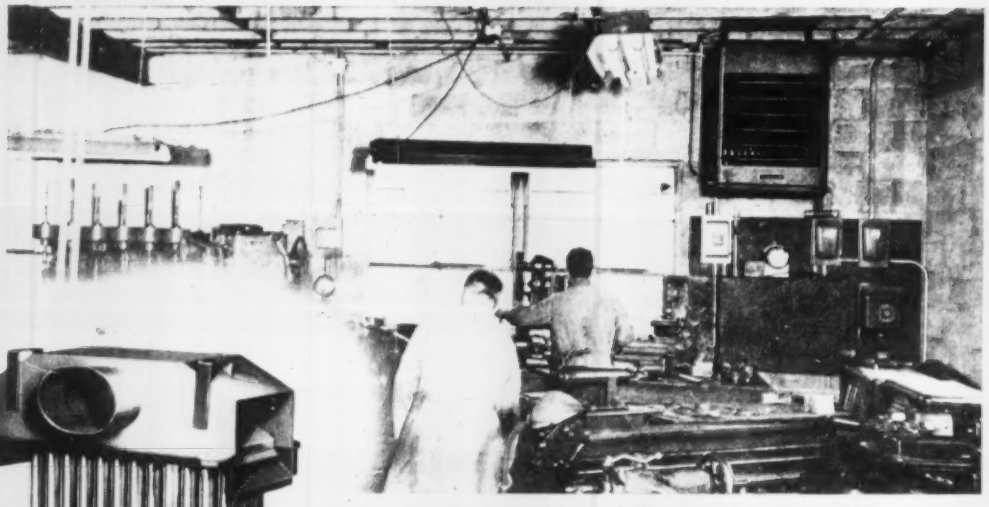
Pittsburgh, Pennsylvania

Plants at PITTSBURGH • VANDERGRIFT • NEW CASTLE • YOUNGSTOWN • CANTON

Subsidiaries: ADAMSON UNITED COMPANY, AKRON, OHIO • LOBDELL UNITED COMPANY, WILMINGTON, DELAWARE
STEDMAN FOUNDRY AND MACHINE CO., INC., AURORA, INDIANA

Designers and Builders of Ferrous and Non-Ferrous Rolling Mills, Mill Rolls, Auxiliary Mill and Processing Equipment, Presses and other heavy machinery. Manufacturers of Iron, Nodular Iron and Steel Castings and Weldments.

HOW THE ROAR OF A JET LED TO A BETTER UNIT HEATER



Stainless Steel heat exchanger and burner assembly of Modine gas-fired unit heater.

ENDURO makes new Modine heater more durable, lighter, faster-acting

The use of heat-resisting stainless steel for jet engine exhaust parts gave Modine Manufacturing Company engineers an *idea.* Although gas-fired unit heaters never are subjected to jet engine temperatures or corrosive conditions, they are vulnerable to similar service hazards.

In new Modine models, Republic ENDURO Stainless Steel is used for heat exchangers and burners. From now on, ENDURO construction will *combat these former heater hazards*—corrosion due to gas acids and contaminated atmospheres . . . high-temperature scaling and flaking, which weakened metal walls and clogged burners . . . rusting caused by condensation and atmospheric moisture . . . cracking . . . and rapid discoloration.

In addition, ENDURO has saved 50 to 200 pounds of weight per unit by permitting lighter gauge construction of exchangers and burners. And, with metal mass reduced, tube warm-up lag is minimized. Tests show that the new units actually deliver heat *within 5 seconds* of the thermostat's signal.

This same type of ENDURO which has made new Modine heaters longer-lasting, lighter and faster-acting is available to you today. Republic metallurgists are ready to work with you in adapting ENDURO to *your own ideas.* Call your nearest Republic District Sales Office, or write:

REPUBLIC STEEL CORPORATION
Alloy Steel Division • Massillon, Ohio
GENERAL OFFICE • CLEVELAND 1, OHIO
Export Department: Chrysler Building, New York 17, N.Y.

NOW . . . SEE AND HEAR "THE STORY OF STAINLESS"

FULL-COLOR, 16 MM SOUND FILM—27 MINUTES RUNNING TIME

Dramatic . . . historic . . . interesting. Available to qualified groups without charge. Requires 16 mm sound projector. Send name of organization, type of projector, requested date to Ideal Pictures Corp., Dept. T-4, 65 E. So. Water Street, Chicago 1, Illinois, or write Republic Steel, Dept. K, Cleveland 1, Ohio.

Republic

REPUBLIC STEEL

ENDURO® STAINLESS STEEL

Other Republic Products include Carbon and Alloy Steels—Pipe, Sheets, Strip, Plates, Bars, Wire, Pig Iron, Bolts and Nuts, Tubing

High-Tensile Bolts Gain Fabricators' Nods

Report labor costs take a dip, less equipment needed, and maintenance cut to nothing. Tests at Northwestern's fatigue lab prove bolt strength superiority

By HARRY O. McCULLY
Vice-President
Russell, Burdsall & Ward Bolt & Nut Co.
Port Chester, N. Y.

HIGH-TENSILE steel bolts for connecting structural shapes continue to gain greater acceptance among steel fabricators. Research at Northwestern University plus numerous recent field applications have shown that bolting is easier, faster, safer and less expensive.

Field experience shows that use of high-strength bolts cuts the erected cost per ton of steel substantially below that incurred with use of rivets. Labor costs take a pronounced dip for several reasons.

Less Man-Hours—First, a two-man bolting team can assemble and tighten 400 bolts a day, while a four-man riveting team can place only 300 rivets in the same period. Second, it is estimated that it takes about 25 cents worth of labor to assemble each 25-cent high-tensile bolt, as against 75 cents to install a 5-cent rivet—a 30-cent advantage for bolting. Finally it takes only a short time to train an unskilled bolting team to handle an impact wrench.

Reduction of equipment required on the job is a substantial economic advantage. The two-man bolting team needs only a pneumatic impact wrench and a holding wrench. On the other hand, a four-man riveting team must have heating forge, tongs, cone or can, air jack or dolly bar, and a pneumatic hammer or gun. This fact counts heavily when it comes to working above ground level or in hard-to-reach locations.

Maintenance Nil—Another cost cutting feature of the high-strength bolting technique is the virtual elimination of maintenance. Chief reason for this is the fact that once these bolts have been tightened to their maximum clamping force, they never loosen. Impact wrench assures uniform tightness of each bolt, thus inspection rarely uncovers a bolt requiring additional take-up.

For these reasons, the American Institute of Steel Construction specifies that only 5-10 per cent need be inspected. Riveting, on the other hand, must be given 100 per cent inspection since 3-5 per cent of the rivets are usually loose and require replacement.

Engineering Plusses—Since high-strength bolts are stronger than ordinary rivets, they are ideal for use where a high degree of joint rigidity is called for, especially under conditions of dynamic loading. In cases where fatigue is critical, high-strength bolts tend to alleviate the stress concentrations which could cause failure.

Three groups of structural joints, identical except for the fastenings, were subjected to fully reversed cycles of fatigue loading in Northwestern University's specially constructed 250,000-pound fatigue machine. The machine tested two specimen joints at a time, applying loads of 250,000 pounds at the rate of 180 cycles per minute for 2 million cycles. Alternate tension and compression stresses were about 20,000 psi.

Results Conclusive — Joints fastened with high-strength bolts registered a fatigue strength of 17,200 psi, while the figure for hot-driven rivets was 15,820 psi, and for cold-driven rivets, 14,700 psi. No bolted joint failed through the bolt section, making it impossible to determine true value for a bolted joint in these tests.

It was clear that the clamping force of the bolt prevents the destruction of the joint to a greater degree than does its ability to resist shear. When the clamping force is sufficient, all the load may be transferred from one plate to the other by friction, without the fastener bearing against the sides of the holes. Thus the gross section of the plates is the determining strength factor, rather than the net section through the holes.

Other Advantages—It is not unusual for a contractor to report that the use of high-strength bolts has reduced the number of man hours required for a given building project by as much as 50 per cent. Not the least of the advantages is the great reduction in construction noise, an important consideration in locations where building noise must be kept down.

High-tensile bolts can be employed in designs conforming to existing codes for riveted structures.

Stanford Gets Hot Cobalt

Largest radioactive source outside of AEC installations was recently unloaded at Stanford Research Institute, Palo Alto, Calif., to become the heart of a new radiation engineering laboratory. With elaborate precautions, the Cobalt 60 was transferred to a laboratory tank of 5400 gallons of water which provides a totally safe shield.

Weighing ten pounds when combined, the source itself comprises four cylinders and a rod, each a foot long and which can be nested or used in various combinations.

Staff radiation engineers will shortly begin experiments with the Cobalt 60 to develop industrial uses for large amounts of radiation. Some of the most promising uses include the nondestructive testing of complicated metal castings and parts. Service will be provided companies wishing to explore uses of radiation for their processes or products.

Washer Maker Adds Plant

Start of construction on a new plant in Sharonville, O., near Cincinnati is announced by Cincinnati Cleaning & Finishing Machinery Co., Ironton and Cincinnati, O.

Erection of the new plant is part of an expansion plan the firm instituted at the end of World War II. While sales and engineering offices have been maintained in Cincinnati, previously all manufacturing production was carried on in two plants located in Ironton.

NEVER BEFORE

anything like this on stripper cranes

- Special electrical counterweight (counter torque device developed by The Alliance Machine Company, prevents ingots from falling, inflicting damage to buggies and also automatically prevents slack cable during stripping operation.)
- Eliminates heavy, hazardous counterweights.
- Due to a unique lubricating device, the ample size bronze nut gives many years of trouble-free service.
- All gears are enclosed and run in oil.
- Cab provides operator with maximum visibility and safety.

There are many reasons why it pays to consult Alliance when you are planning to install material-handling equipment. Over half a century of experience building cranes and mill machinery is always at your disposal.

World's Largest Builders of World's Largest Cranes

LADLE CRANES · **GANTRY** CRANES · FORGING MANIPULATORS · SOAKING PIT CRANES
STRIPPER CRANES · SLAB AND BILLET CHARGING MACHINES · OPEN HEARTH CHARGING **MACHINES** · SPECIAL MILL MACHINERY · STRUCTURAL FABRICATION · COKE PUSHERS

THE ALLIANCE MACHINE COMPANY

Main Office, ALLIANCE, OHIO · Pittsburgh Office, 1622 OLIVER BLDG., PITTSBURGH, PA.

Alliance

NEW PRODUCTS and equipment

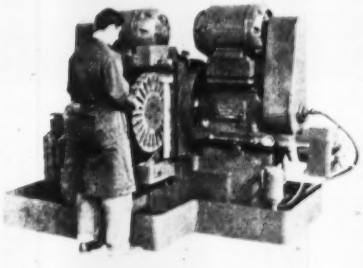
Reply cards on page 103 will bring you more information on any new products and equipment in this issue

Turbine Blade Grinder

. . . rough grinds parallel ends

Double spindle turbine blade grinder, model 125, rough grinds parallel ends of blades on a high-production basis. The 26-inch machine consists of a heavy cast iron base supporting two grinding heads on dovetailed slides, operating on ball bearing ways. Centralized lubrication to these ways is provided.

Rotary attachment carries a work-carrier having about 26 slots, into which blades are loaded man-



ually. Pieces unload automatically after leaving the hold-down. Rotary attachment drive permits varying speed of work-carrier within a 3 to 1 ratio. Production rate: 20 to 25 pieces per minute, removing 1/16-inch maximum stock per end. Gardner Machine Co., Dept. ST, Beloit, Wis.

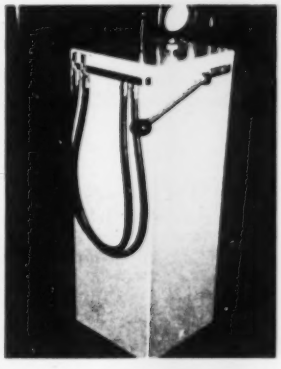
USE REPLY CARD—CIRCLE No. 1

Leak Check Stand

. . . tests small castings

This tester checks for leaks in small castings and inter-drilled passages in a variety of parts. Hand pumped pressures up to 1000 psi are available. Volume per stroke is about 1 cu in.

A poppet-type four-way valve is used to make possible evacuating a cavity as well as filling it. A needle valve holds pressures over a long period of time. Pressure is obtained from an aircraft-type hand pump, supplied from a 5-gal-



lon reservoir. An access door at the rear makes cleaning and refilling simple. Various sizes can be supplied, either hand-operated or motorized. Planet Products Corp., Dept. ST, 6305 Warrick St., Cincinnati 27, O.

USE REPLY CARD—CIRCLE No. 2

Portable Spectrometer

. . . eases qualitative analysis

Comparison spectrometer simplifies qualitative analysis of metallic elements. To identify any particular element, wave length of its spectral lines can be noted on a calibrated scale. By referring to the table supplied with the instrument, identity of the unknown element is established. An optical system permits two spectra to be viewed simultaneously against a superimposed wave length scale.

A cuvette attachment furnished with the unit adapts it for use as a visual colorimeter for testing absorption spectra of liquids. National Instrument Co., Dept. ST, 5005 Queensbury Ave., Baltimore 15, Md.

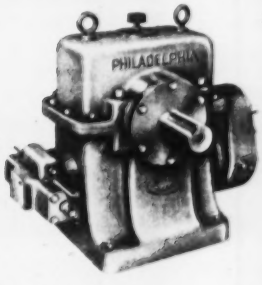
USE REPLY CARD—CIRCLE No. 3

Worm Gear Speed Reducer

. . . automatic overload shutoff

Designed for use as a conveyor drive, this worm gear speed reducer incorporates automatic and instant shutoff device for overload protection. This feature eliminates need for sheer pin coupling.

When predetermined load is reached, motor current is immedi-



ately cut off by direct mechanical action of the overload. To restart, only removal of excessive load is necessary. Horsepower and ratio ratings are available in range from 3½ to 1 up to 6300 to 1. Philadelphia Gear Works, Dept. ST, Venango & G Sts., Philadelphia 34, Pa.

USE REPLY CARD—CIRCLE No. 4

Lubricating Enamels

. . . brushed or sprayed on

Tough, adherent, load-bearing dry-lubricant finishes may be applied to any machine or instrument surface by the use of Liqui-Moly molybdenum-base lubricating enamels. Known as Molynamel, it is

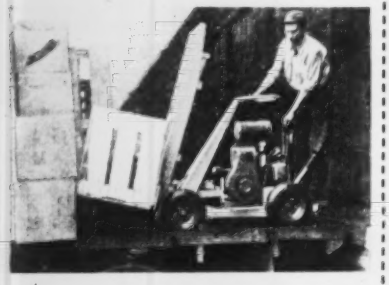
brushed or sprayed on. It gives a lustrous, hard, greasy-feeling but clean coating from a fifth to half a thousandth thick. Lockrey Co., Dept. ST, Southampton, N. Y.

USE REPLY CARD—CIRCLE No. 5

Purts Handling Truck

. . . lightweight, maneuverable

This 800-pound handler has convenience of hand truck, but employs 7.5 hp. Wisconsin AEN engine to gain power and speed. Compact construction, small turning radius and front wheel steering enables



the model to move through narrow aisles and crowded or cluttered areas. Its light weight permits use on elevators and floors where heavy units cannot operate.

Driver rides on pedal platform. Maximum speed: 9 mph forward, 7 mph reverse. Truck operates in 56-inch aisles, turns in 68-inch radius. Kalamazoo Mfg. Co., Dept. ST, 1827 Reed St., Kalamazoo, Mich.

USE REPLY CARD—CIRCLE No. 6

Finger-Type Sisal Buff

. . . works curves, recesses

Finger-type design that makes it particularly adaptable for work involving curved surfaces and re-

cesses is a feature of this sisal buff. Finger is made in such a manner that only raw ends of the sisal fibres contact the work. Cutting compounds are picked up readily and held.

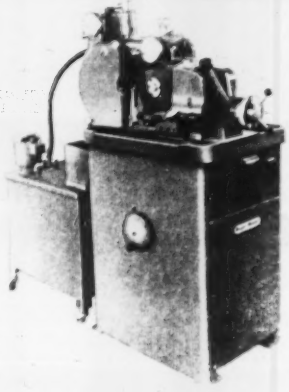
Advantages include faster cutting and longer wearing qualities. The buff is produced in sizes from 6 to 18 inches diameter for both hand and automatic machine buffing. Geo. R. Churchill Co. Inc., Dept. ST, 7534 Fayette St., N. Quincy 71, Mass.

USE REPLY CARD—CIRCLE No. 7

Centerless Grinding Machine

. . . for small diameter work

Centerless grinder, model TG-123, handles 1/16 to 1-inch diameter straight or contour work. Tolerances as fine as 0.0003-inch can be held consistently. Regulating wheel spindle range of 30 to 480 rpm is provided through an infinitely variable speed drive. Gearless



drive eliminates possibility of gear tooth pattern on the work.

Manual infeed lever is in a convenient, accessible position. Provision is made for mounting an 0.0001-inch indicator. Standard equipment includes contour dressing type manual wheel dressers. Coolant tank is a completely separate unit mounted on large casters. Royal Master Metal Products Co., Dept. ST, Riverdale, N. J.

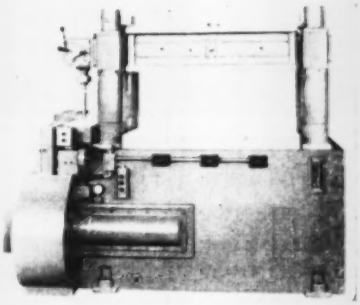
USE REPLY CARD—CIRCLE No. 8

Die Tryout Press

. . . head rotates to 240 degrees

This 100-ton die tryout press is built with head that can be released quickly and rotated to any point up to 240 degrees. Press occupies 75 x 84 inches floor space. Its overall height is 82 inches. Head rotation permits operator to barber, spot, shear, fit and finish both punch and die without removing die from the press.

Clutch is a combination flywheel type, air operated, with multiple disk brake. Electric clutch control permits inching, single stroke, continuous operation and forward or



reverse operation. Press has 6-inch stroke and operates efficiently at 50 strokes per minute. Alpha Tool Works, Dept. ST, 9281 Freeland Ave., Detroit 28, Mich.

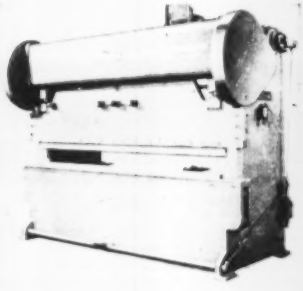
USE REPLY CARD—CIRCLE No. 9

All-Steel Press Brakes

. . . 50, 100, 150-ton series

Line of all-steel press brakes includes 50, 100 and 150-ton series. Laminated nonmetallic ways maintain accurate alignment and hold wear to a minimum. Double reduction gearing and double end twin drive with gearing enclosed in sealed oil bath provide balanced and efficient power transmission to the ram.

Air-cooled clutch and brake can be controlled either by foot treadle



or pushbutton, permitting jogging, single stroking and continuous operation. With a motor reversing switch, flywheel can be reversed to pull the ram out of accidental stalls. Self-locking, power-operated ram adjusting screws are fitted with micrometer dials to permit duplica-

SUMMERILL HYDRAULIC TUBING

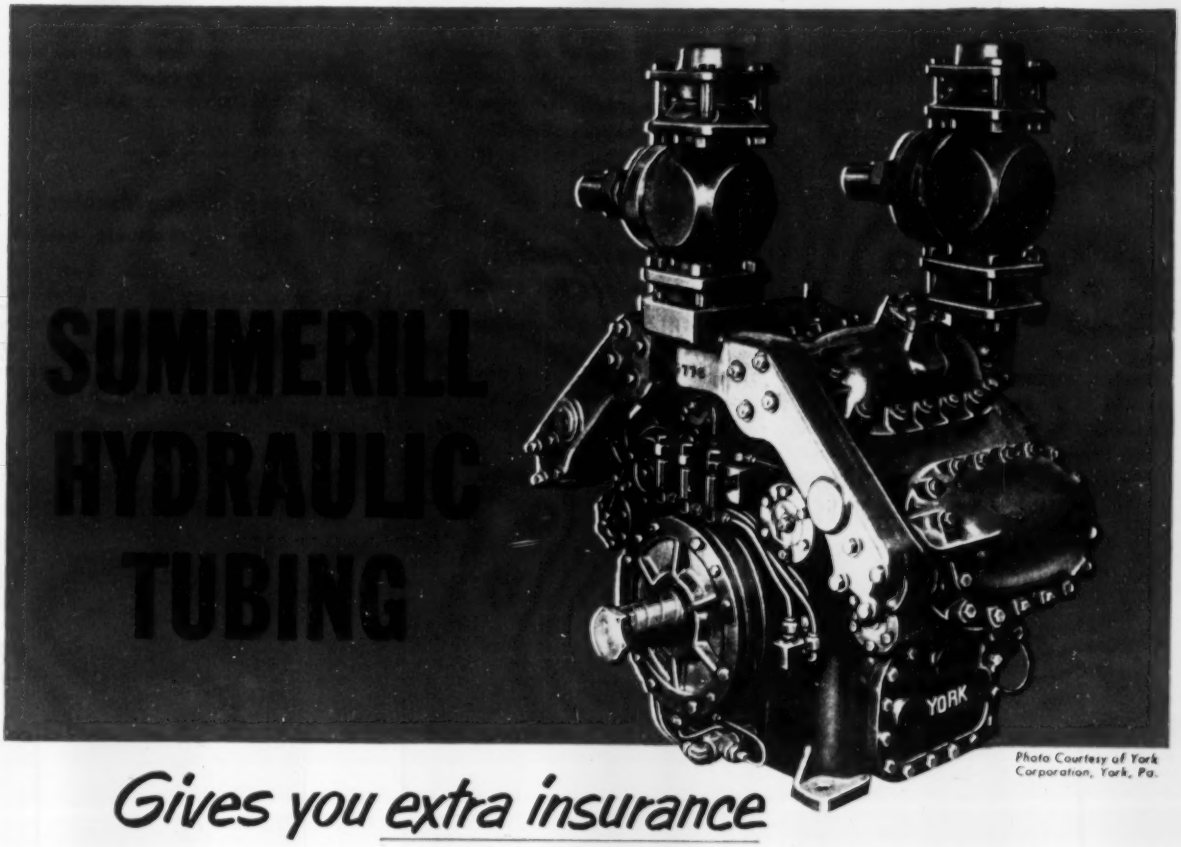


Photo Courtesy of York Corporation, York, Pa.

Gives you extra insurance against pressure lubrication failure!

HERE'S WHY IT'S "EXTRA"

★ Summerill Tubing is made in the nation's most recently built plant for the exclusive production of cold drawn seamless steel tubing, in a full range of carbon steel sizes from 3/16" to 1½" O.D. The latest methods and equipment are used.

★ Only selected raw material—the very best—is used to make Summerill Hydraulic Tubing. It is a true premium product, made in accordance with JIC Standards for tubing in industrial equipment.

★ Every length is closely inspected and rigorously tested before shipment to assure uniform physical characteristics and hydrostatic qualities; ends are flared to be sure of ductility, etc.

The ammonia compressor illustrated above is typical of the long list of machine units which employ Summerill cold drawn seamless steel Hydraulic Tubing for pressure lubrication systems. Some units use tubing flared for fittings, others use it with straight ends—but in every case, the prime requirement is uniformly, dependably high quality.

This tubing *can't* fail! It has to be foolproof . . . extremely ductile and free from any internal or external defects that might cause breakage in use. That's why *steel* tubing gets the call today. It offers extra strength, extra protection—and Summerill Hydraulic Tubing brings you these qualities at their peak. ● Let us work with you. *Summerill Tubing Company Division, Columbia Steel & Shafting Company, Pittsburgh 30, Pa.*

IN COLD DRAWN SEAMLESS STEEL TUBING

SPECIFY *Summerill* **AND BE SURE!**

W&D 4436

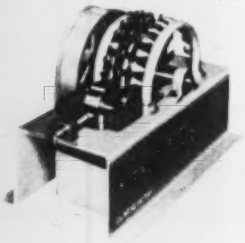
tion of settings or for repeat jobs. Niagara Machine & Tool Works, Dept. ST, 637-697 Northland Ave., Buffalo 11, N. Y.

USE REPLY CARD—CIRCLE No. 10

Heat Check Tester

. . . checks metal resistance

This tester determines relative resistance of steels to heat checking. Test pieces are successively heated, stressed and cooled. This cycle is repeated until the specimen develops visible cracks or heat checks. Number cycles required to produce heat checks is indicated on



a counter attached to the machine. As many as 18 pieces can be tested at one time.

Effects of various heat treatments, range of heating and cooling, amount of pressure applied to the specimen and effects of various alloying elements on the steel's resistance to heat checking can be studied. Called Thermo-Test, the tester is about 24 x 36 x 18 inches. Henry G. Keshian, Dept. ST, Hotchkiss Grove, Branford, Conn.

USE REPLY CARD—CIRCLE No. 11

Portable Semiautomatic Lathe

. . . operates semiautomatically

Portable lathe, model B-23, is a completely self-contained unit, semiautomatic in operation after initial setup is made. Ten speeds from 0 to 45 rpm are rheostat controlled. Infinite feed controls and other features can be adjusted while lathe is in operation.

Lathe head travels as it revolves on a boring bar arbor. The tool arm, adjustable for diameters from 7½ to 20 inches, remains fixed in relation to the head. Design permits external or internal machining of a circular workpiece up to 20 inches diameter by simply reversing the holder and installing the cutting tool. Industrial Division, Barrett Equipment Co., Dept. ST, 2101 Cass Ave., St. Louis 6, Mo.

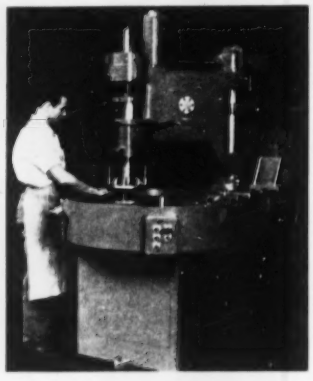
USE REPLY CARD—CIRCLE No. 12

Precision Honing Machine

. . . for optically flat surfaces

Optically flat surfaces up to 20 inches diameter can be precision finished with this model 844 Microflat Microhoning machine. The model provides for four different speeds in the head and simultaneous changing of spindle and wheel speeds. Motorized wheel dresser is mounted on machine. Spindle speed can be changed independent of wheel speed.

The abrasive wheel is geared to the same motor that drives the



spindle, so speeds of both spindle and wheel can be changed simultaneously by one control. An adjustable stop on the quill housing permits repetition of height setting and adjustment for wheel wear. Micromatic Hone Corp., Dept. ST, Detroit 4, Mich.

USE REPLY CARD—CIRCLE No. 13

Rubber-Like Coating

. . . resists oil, grease, acid

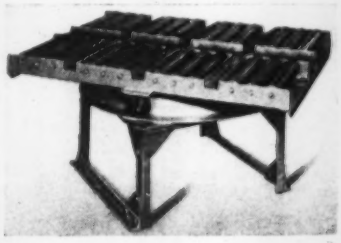
Cycloflex No. 7731 is a free-flowing, viscous liquid which, with heat, is converted into a flexible rubber-like coating. When applied to component metal parts, a smooth, dense, tough, highly abrasion resistant coating is obtained. It can be furnished from 1/32-inch to ½-inch thick. Coating is resistant to oils, greases, acids, alkalies, salts of inorganic acids as well as oxidation. Munray Products Inc., Dept. ST, 12400 Crossburn Ave., Cleveland 11, O.

USE REPLY CARD—CIRCLE No. 14

Conveyor Strapping Machine

. . . strapping channels built-in

Fast and easy bale, box and bundle strapping is provided by special roller conveyors with built-in strapping channels. With straps laid in the channels, the package is assembled or rolled into proper



position, the straps drawn tight and sealed with hand or machine strapping tiers.

Tying conveyors are furnished as straight conveyor sections to fit into a conveyor line or with turntable stands as illustrated for selective transfer of finished packages to various conveyor lines. Samuel Olson Mfg. Co. Inc., Dept. ST, 2423-25 Bloomingdale Ave., Chicago 47, Ill.

USE REPLY CARD—CIRCLE No. 15

Carbide Tipped End Mill

. . . penetrates end cutting

A three fluted, center cutting, carbide tipped end mill is capable of penetrating end cutting as well as routing, etc. It is designed for nonferrous and nonmetallic materials and is stocked in both straight shank and B & S taper shank in six sizes, $^{3}/_{8}$ to $^{3}/_{4}$-inch inclusive. Super Tool Co., Dept. ST, 21650 Hoover Road, Detroit 13, Mich.

USE REPLY CARD—CIRCLE No. 16

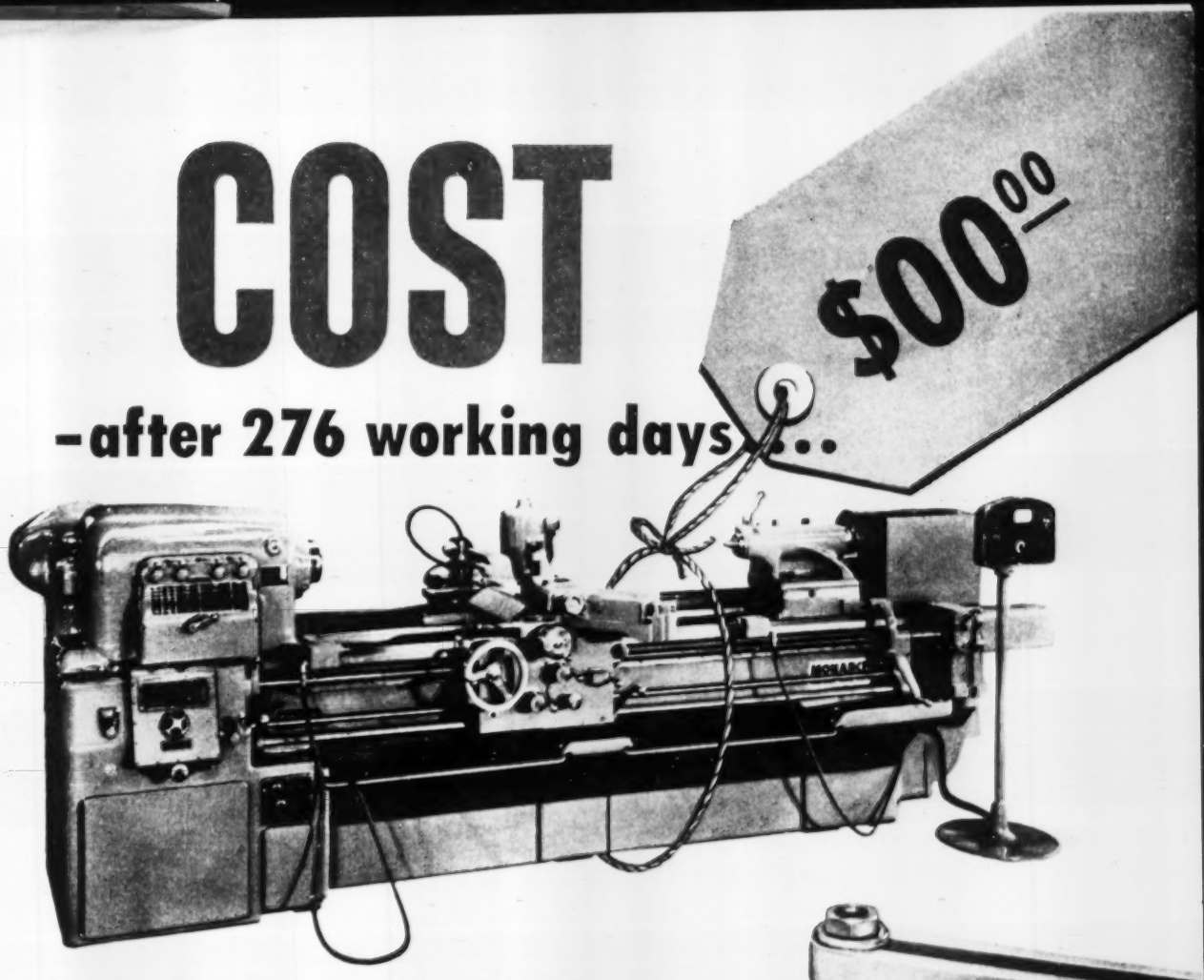
High Pressure Hose

. . . carries gases or fluids

Wiretex hose is made with a mandrel cured, Reprene tube in lengths up to and including 60 feet. It is designed to carry various types of

COST

-after 276 working days...



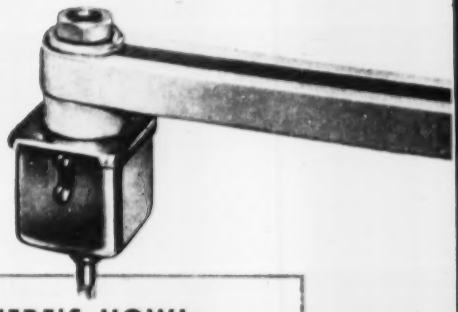
IT WROTE OFF ITS COST IN 10½ MONTHS!

This report comes from a well-known machine tool manufacturer (not us!). We can show you many similar ones from all kinds of plants. They all add up to one incontrovertible fact—Monarch Air-Gage Tracer controlled, fully automatic turning, with its single running tool, delivers output at top efficiency. Why not? Look how many ways it saves! In turning time. In setup time. In tooling time and costs. In subsequent grinding. It's true of short runs as well as long ones.

The Monarch Air-Gage Tracer is known everywhere for its superb accuracy of duplication. The swiveling type used here adds to this accuracy an amazing versatility. Apply it to our 20 x 72 Series 60 Lathe and add the Autocycle Control as above, and you have the shop man's dream come true—the ultimate in versatility *plus* fully automatic operation.

This manufacturer, after only brief experience with his Series 60, quickly added a 20 x 168 Model M Heavy-Duty Lathe with similar equipment. Together, using round templates, these machines are delivering automatic output of over 600 jobs!

The Air-Gage Tracer is right! Its performance is right! Why don't *you* write—for complete information? Request Booklet #2606 and mention your specific requirements. . . . *The Monarch Machine Tool Company, Sidney, Ohio.*



HERE'S HOW!

. . . And by the user's own figures! This lathe was bought to turn 20 to 25 jobs. It proved so versatile that, with the larger Model M, it's now turning 600. Time savings vary from job to job, but here's a sample. One difficult work piece used to require 3½ hours' turning. It's turned now—in lots of 24—in 10 min. per piece. Each *lot* in only slightly more time than it used to take for each *piece!*

Monarch

ACCURACY • ECONOMY • LONG LIFE

TURNING MACHINES

• • • • • FOR A GOOD TURN FASTER • • • • • TURN TO MONARCH • • • • •

SIMONDS
ABRASIVE CO.
Grinding Wheels

An ex-PFC ranks high with the "top brass!"

He's now an *operator* first class, and he sure knows the grinding wheels that make his work "come to attention."

They're Simonds Abrasive Company grinding wheels. And they prove themselves in a big way long before he even uses them. Right in Simonds own plant these wheels must satisfy a practical, rough-minded group of department heads that they're *right* for the job . . . grind fast . . . cut cool . . . and keep their shapes.

This insistence on excellence is the reason why Simonds wheels give top rate results on rough grinding, finishing, sharpening, polishing, cutting-off, etc., . . . and why you should know where to get them.

Write for name of your Simonds Abrasive distributor and free data book.

SIMONDS ABRASIVE CO., PHILADELPHIA 37, PA. BRANCH WAREHOUSES: CHICAGO, DETROIT, BOSTON
DISTRIBUTORS IN PRINCIPAL CITIES

Division of Simonds Saw and Steel Co., Fitchburg, Mass. Other Simonds Companies: Simonds Steel Mills, Lockport, N. Y., Simonds Canada Saw Co., Ltd., Montreal, Que. and Simonds Canada Abrasive Co. Ltd., Arvida, Que.

NEW PRODUCTS and equipment

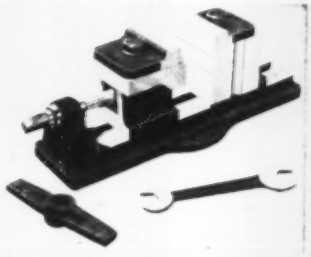
gases or fluids under both high and low pressures. Hose is not weakened by constant vibration or flexing and will not rust or corrode. Republic Rubber Division, Lee Rubber & Tire Corp., Dept. ST, Youngstown 1, O.

USE REPLY CARD—CIRCLE No. 17

Utility Clamping Vise

. . . setup time reduced

This versatile four-in-one vise reduces setup time, eliminates costly jigs. The vise saves time required to hunt for and adjust clamps, bolts, parallel strips, etc., ordinarily used in rigging work on



machine tools. All parts necessary for clamping work securely and accurately are included.

Rear turret revolves, presenting four different faces for holding various kinds of work. Auxiliary jaws at the top of each turret can be spread at an angle to hold odd-shaped work. Brown Engineering Co., Dept. ST, Reading 2, Pa.

USE REPLY CARD—CIRCLE No. 18

Universal Joint

. . . for remote control uses

Designed primarily for instrumentation and remote control applications where backlash must be kept to a minimum, the universal joint employs ⅛-inch diameter centerless ground pivots and surface ground center blocks of steel

USE A REPLY CARD

Just circle the corresponding number of any item in this section for more information.

INFORMATION

AVAILABLE FOR THE ASKING

71. Angle Set Vises

Universal Vise & Tool Co.—Three-way angle-set vises for holding milling, drilling and grinding jobs rigidly at any angle are subject of 6-page folder. Devices feature 360-degree base rotation and 90-degree adjustment of both lower and upper cradle. Typical application drawings are featured.

72. Aluminum Weld Treatment

Diversey Corp.—"A New and Improved Process for Preparing Aluminum and Its Alloys for Spot Welding" is title and subject of bulletin No. 49D which outlines the Diversey process. Technical details, descriptions, tables, graphs and case histories are included.

73. Soot Blower

Continental Foundry & Machine Co., Copes-Vulcan Div.—Vulcan long retractable soot blowers with air and electric drives and suitable for travels of more than 20 ft are subject of 8-page bulletin 1002. Blowing with steam or air without change in original equipment is possible, and rotating and traversing speeds are independently adjustable.

74. Shelf Storage

Frick-Gallagher Mfg. Co. — The benefits of using Rotabin rotary shelving to store parts, tools and materials are discussed in 16-page catalog "The Science of Economical Shelf Storage." Advantages include up to 50 per cent savings in floor space and material handling costs. Design and construction features are shown and described, along with shelving accessories.

75. Air Motors & Devices

Bellows Co.—24-page bulletin CL-30 tells the story of Bellows air motors and how these compact, responsive devices make possible the quick, economical conversion of standard machine tools into fast automatic units. A myriad of application photos, plus detailed illustration of the units "integral construction" are featured. In clamping operations, pressures up to 15,000 psi are possible.

76. Zinc Conversion Coatings

United Chromium, Inc. — Unichrome Dip and Anozinc processes for producing corrosion - resisting chromate conversion coatings on metal parts are briefly described in small 6-page folder CC-1.

77. Packaging Techniques

Hinde & Dauch Paper Co. — Though the Holidays are just over, now is the time many companies start thinking about next year's holiday business. An aid to this planning is 30-page illustrated booklet "How to Use Holiday Corrugated Boxes." Some excellent pointers on merchandise and equipment packaging are presented in this No. 13 booklet in the Little Packaging Library.

78. Insulation With Silicones

Dow Corning Corp.—Advantages of using Class H insulation made with silicones in electric motors are outlined in 4-page illustrated bulletin G-26. Twelve types are described and their applications and characteristics are given.

79. Forging Presses

E. W. Bliss Co.—Specification data on a new line of high speed forging presses are contained in 4-page illustrated bulletin 42. Presses are available in eleven sizes with capacities ranging from 300 tons to 4000 tons.

1-26-53

STEEL
Penton Building, Cleveland 13, Ohio

Please send literature or detailed information on subjects circled at left to—

NAME _____ TITLE _____

COMPANY _____

PRODUCTS MANUFACTURED _____

ADDRESS _____

CITY AND STATE _____

This card MUST be completely filled out. Please TYPE or PRINT

1	11	21	31	41	51	61	71	81
2	12	22	32	42	52	62	72	82
3	13	23	33	43	53	63	73	83
4	14	24	34	44	54	64	74	84
5	15	25	35	45	55	65	75	85
6	16	26	36	46	56	66	76	86
7	17	27	37	47	57	67	77	87
8	18	28	38	48	58	68	78	88
9	19	29	39	49	59	69	79	89
10	20	30	40	50	60	70	80	90

FIRST CLASS
Permit No. 36
(Sec. 34.9 P.L.&R.)
CLEVELAND, OHIO

BUSINESS REPLY CARD
No Postage Stamp Necessary if Mailed in the United States

POSTAGE WILL BE PAID BY—

STEEL
Penton Building
Cleveland 13, Ohio

Readers Service Dept.

80. Conveyor Belting

Barber-Greene Co. — Engineering and precision manufacturing behind B-G conveyor belts are summed up with pictures, charts and tabular data in 8-page illustrated bulletin "Conveyor Belts." Three major causes of belt failure and their cure are discussed. Selection tables simplify choosing the right belt for each application.

81. Cutting Gear Teeth

Cincinnati Milling Machine Co. — Instructions on cutting worms and worm-wheels, and spur, helical and bevel gear teeth on a milling machine are contained in 60-page illustrated booklet M-1769. Much technical info, including graphs, formulas, and line drawings are included.

82. Small Die Castings

Dollin Corp. Typical examples of Zamak alloy No. 3 or 5 small die castings are shown in 4-page illustrated bulletin "New Design Horizons." Company produces intricate parts at high speed and offers its facilities to you. Possible savings are outlined.

83. Powder Metal Parts

Metachem Laboratories, Inc.—"A Short Cut to Production of Powdered Metal Parts" is a 4-page illustrated bulletin that describes mixers, briquette presses and dies, sintering furnaces, coining presses and dies, packaged complete mixes, molding kit, retort kit and other equipment and services that are available to prospective producers of powdered metal parts.

84. Vibration Meter

Consolidated Engineering Corp. — Looking for a vibration meter that gives direct readings of both linear and torsional velocity and displacement for easy calculation? If so, bulletin CEC 1505B describes it in 4 pages. It has five ranges of sensitivity and accommodates two pickups at one time.

85. Industrial Insulations

Baldwin-Hill Co. — 20-page engineering data book "Industrial Insulations" deals with materials which apply to the temperature range from 150 F to 1800 F. Insulating cement, block, felt, blanket and pipe covering are a few of the products shown. Complete thermal-conductivity graphs and heat loss charts, together with typical uses, sizes, packaging and densities simplify selection and application.

86. Crane Cab Coolers

Dravo Corp. If it's hot at floor level in your plant, think what it is up in the crane operator's cab. Here's a 24-page illustrated booklet that gives the details on crane cab coolers and conditioners. Units for all cranes, temperatures and types of installations are described and their specifications given. Might be a key to more efficiency.

EDITORIAL REPRINTS:

87. Porcelain Coatings

High alloy steel shortages has focused attention on use of porcelain enamel coatings on the more abundant base metals. A review of design and fabrication data shows that some of the "impossible" coating applications of the past are becoming routine. W. A. Barrows summarizes this data in STEEL reprint "Porcelain Coatings: Ingenuity Is the Progress Factor."

88. Tinning Problems

Solution contamination problems at Wheeling Steel Corp. were minimized with Alemite oil mist lubrication of conductor rolls of two electrolytic tinning lines. Results, fewer "menders" and less maintenance. The full story is in STEEL reprint headlined "Oil Mist Tames Tinning Problems."

89. Two Way Press

In STEEL reprint entitled "Two Way Press Produces High Pressure Parts" is described press built by A. B. Farquhar Co. for Cameron Iron Works, Inc. Main vertical ram has 5000-ton capacity and two horizontal rams rated at 2000 tons. Techniques developed with this giant broadens the field of possible press forged shapes and patterns.

90. Cam Curves

You can whip the bugaboo of contoured cam surfaces by using standard machines, some with special attachments, or special machines. Some of the ways to do it are given in STEEL reprint entitled "Cam Curves Aren't Tough," by J. E. Hyler.

BUSINESS REPLY CARD

No Postage Stamp Necessary if Mailed in the United States

POSTAGE WILL BE PAID BY—

STEEL

Penton Building

Cleveland 13, Ohio

FIRST CLASS
Permit No. 36
(Sec. 34.9 P.L.&R.)
CLEVELAND, OHIO

1	11	21	31	41	51	61	71	81
2	12	22	32	42	52	62	72	82
3	13	23	33	43	53	63	73	83
4	14	24	34	44	54	64	74	84
5	15	25	35	45	55	65	75	85
6	16	26	36	46	56	66	76	86
7	17	27	37	47	57	67	77	87
8	18	28	38	48	58	68	78	88
9	19	29	39	49	59	69	79	89
10	20	30	40	50	60	70	80	90

STEEL

Penton Building, Cleveland 13, Ohio

1-26-53

Please send literature or detailed information on subjects circled at left to—

NAME

TITLE

COMPANY

PRODUCTS MANUFACTURED

CITY AND STATE

ADDRESS

This card MUST be completely filled out. Please TYPE or PRINT

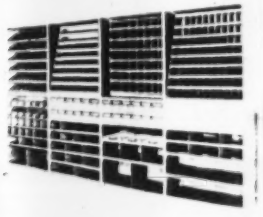
or type 303 stainless steel. Forks are brass with precision reamed holes and with outer surfaces nickel plated to meet Army specifications 72-53 for 100 hour salt spray resistance. Kupfrian Mfg. Co., Dept. ST, 396 State St., Binghamton, N. Y.

USE REPLY CARD—CIRCLE No. 19

Tool Crib Installations

. . . inserts fit all crib needs

Variety of inserts can be placed in steel shelving for tool crib arrangements, as shown in this installation. Different types of inserts can be used, depending upon requirements, for storage of drills,



reamers, taps, milling cutters and other tools. Each shelf is equipped with label holders. Lyon Metal Products Inc., Dept. ST, Aurora, Ill.

USE REPLY CARD—CIRCLE No. 20

Extreme Pressure Additive

. . . for cutting, lubricating oils

Molykote M-55 is a colloidal dispersion of Molykote powder suspended in a synthetic vehicle compatible with any petroleum or sulphur base cutting or lubricating oil. It can be used as an extreme bearing pressure additive to conventional oils in force-feed lubrication systems of machinery and as an additive to cutting and coolant oils whenever frictional component is a substantial part of total cutting force. Alpha Corp., Dept. ST, 179 Hamilton Ave., Greenwich, Conn.

USE REPLY CARD—CIRCLE No. 21

USE A REPLY CARD

Just circle the corresponding number of any item in this section for more information

PROBING INTO 30 FEET OF SOLID STEEL FOR DEFECTS SPERRY . . .

OFFERS THESE COST SAVING ADVANTAGES

- Easily portable for on-the-job inspection.
- Improves quality control, increases customer acceptance of your product.
- Locates defects *before* machining saving wasted production time.
- Maintenance inspection without disassembly eliminates shutdowns.

INDUSTRIES NOW USING THE SPERRY *ULTRASONIC* REFLECTOSCOPE INCLUDE:

AIRCRAFT
AUTOMOTIVE
CHEMICAL
LIGHT METALS
MARINE
ORDNANCE
PAPER
PIPE
RAILROAD
STEEL

Sperry is a name long synonymous with scientific research and development. Pioneer in non-destructive testing, Sperry now makes possible the ULTRASONIC detection of hidden defects in raw stock and in semi-finished or finished material.

The REFLECTOSCOPE generates ultra high frequency sound waves that penetrate up to 30 feet in solid metal; any internal defects are located instantly and accurately.

The Sperry Reflectoscope — most versatile testing instrument ever developed — is available to industry for sale, for lease or as a day-to-day testing service. LEARN HOW Reflectoscope testing has solved costly inspection problems. WRITE TODAY for illustrated Industrial Application Reports, stating the item to be tested and your inspection problem.

Sperry

SPERRY ALSO MANUFACTURES COUPLINGS, HYDRAULIC CONTROLS AND OTHER TESTING EQUIPMENT

SPERRY PRODUCTS, INC.
601 Shelter Rock Road
Danbury, Connecticut

Please send me Industrial Application Report on:
ITEM TO BE TESTED
INSPECTION PROBLEM
NAME
TITLE
COMPANY
CO. ADDRESS
CITY ZONE STATE

SCRAP
for your every requirement
LURIA BROTHERS AND COMPANY, INC.
CONSULT OUR NEAREST OFFICE FOR THE PURCHASE AND SALE OF SCRAP.
MAIN OFFICE
LINCOLN-LIBERTY BLDG.
Philadelphia 7, Penna.
PLANTS
LEBANON, PENNA.
READING, PENNA.
MODENA, PENNA.
DETROIT (ECORSE), MICHIGAN
PITTSBURGH, PENNA.
ERIE, PENNA.
OFFICES
BIRMINGHAM, ALA.
BOSTON, MASS.
BUFFALO, N. Y.
CHICAGO, ILLINOIS
CLEVELAND, OHIO
DETROIT, MICH.
HOUSTON, TEXAS
LEBANON, PENNA.
LOS ANGELES, CAL.
NEW YORK, N. Y.
SEATTLE, WASH.
PITTSBURGH, PENNA.
PUEBLO, COLORADO
READING, PENNA.
ST. LOUIS, MO.
SAN FRANCISCO, CAL.
LEADERS IN IRON AND STEEL SCRAP SINCE 1889
Berman

The Market Outlook

THE STRONG DEMAND for steel is making itself felt for as far ahead as May.

With the approach of the government deadline of Feb. 1 for steel companies to open their order books for May delivery of nondefense steel, the companies are being deluged with requests for space for steel products now in tightest supply. Included are heavy and wide sheared plates, hot-rolled and cold-finished carbon and alloy bars over an inch in diameter, hot-rolled and cold-rolled carbon sheets.

SIGN OF THE TIMES—Further evidence of the sustained strong demand for the major products is the eagerness with which consumers, particularly automakers, seek conversion arrangements for sheets and bars. Under this method consumers get semi-finished steel from producers short on rolling capacity and engage other producers with surplus rolling capacity to roll it into finished forms.

In most cases, fast processing is wanted by those currently seeking conversion arrangements.

ROOM FOR HOPE—As the year progresses, deliveries of steel should speed up. The steel industry has a capacity bigger than ever before, it is operating near capacity, and it is planning substantial further expansion.

MORE EXPANSION—This year, steel companies plan to spend about $1 billion for additional expansion, the American Iron & Steel Institute reports. This will provide for approximately 4 million tons of steel and other necessary additional facilities. Last year a record high of $1,170,000,000 was spent for capital expansion and improvements. Simultaneously, the industry made the greatest yearly increase in steelmaking capacity in history, nearly 9 million tons, for a new high of 117.5 million tons.

SLOW DOWN—Temporarily the industry dropped from its record-breaking production pace. A strike in the Youngstown district cut the national rate of steelmaking to 98 per cent of capacity in the week ended Jan. 24. This is equivalent to 2,209,370 net tons of steel for ingots and castings. In the preceding week when the national rate was 99.5 per cent the output was at an all-time high of 2,243,000 tons.

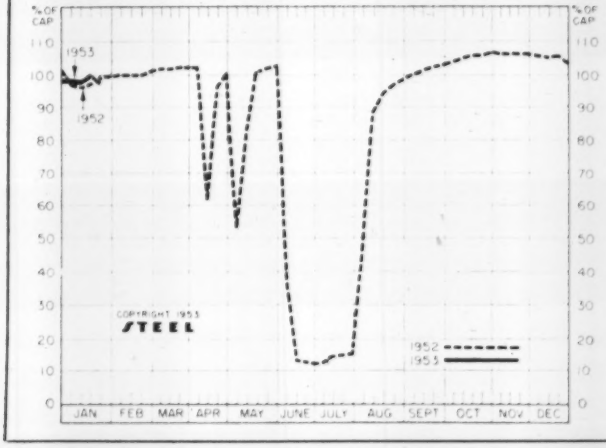
While there are not enough of some of the finished steel products to go around, others are in adequate supply. For instance, hot-rolled and cold-finished bars over an inch in diameter are in very tight supply, while those products in diameters of less than an inch are in good supply.

SOMETHING TO WATCH—In some cases, consumers are buying foreign steel to piece out their needs. Foreign iron and steel producers are increasing their competition for business in the United States. Additional evidence of this is the offering, after a long absence, of Australian pig iron on the Pacific Coast at $3 to $3.50 a ton under domestic prices. This renewal of competition comes at a time when demand for merchant pig iron is the lightest it has been for a long time. Gray iron foundries, users of merchant pig iron, have been experiencing a business lag.

Warehouses, from which the small consumers get their steel, still enjoy a good flow of orders for the most-wanted products, although demand is easing. This easing and steady receipts of steel from mills are making some improvement in warehouse stocks, which have been badly unbalanced.

SCRAP KEEPS PACE—Scrap steel, an important ingredient in the making of new steel, continues to be adequate in supply despite the increased needs of the expanding steelmaking capacity. A localized exception to this is in the East where U. S. Steel Corp.'s purchase of scrap to stock its new Fairless Works at Morrisville, Pa., increased the interest in steelmaking grades, which are holding at government ceiling prices. Also, that plant's purchase of cast grades of scrap firmed up the entire market on cast scrap, which had been selling below ceilings.

NATIONAL STEELWORKS OPERATIONS



DISTRICT INGOT RATES

Percentage of Capacity Engaged at Leading Production Points

	Week Ended Jan. 24	Change	Same Week 1952	Same Week 1951
Pittsburgh	100	2*	92	95.5
Chicago	105.5	0*	101.5	102
Mid-Atlantic	96	1	99	99.5
Youngstown	98	0	104	106
Wheeling	103.5	+2.5	100.5	96.5
Cleveland	100	2*	92.5	103.5
Buffalo	106.5	0	101	101
Birmingham	106	0	101	100
New England	90	1	85	92
Cincinnati	93.5	0.5	101	106
St. Louis	101	8	81.5	88
Detroit	106	1.5*	104.5	107.5
Western	105.5	0	104	105
Estimated national rate	98	1.5	99.5	100

*Change from preceding week's revised rate.

Estimated national, Mid-Atlantic, Birmingham and Cleveland rates are based on Jan. 1, 1953, capacities; others, on Jan. 1, 1952, capacities.

Weekly steelmaking capacity is estimated at 2,254,460 net tons in 1953; 2,027,080 tons in 1952; 1,995,034 tons in 1951.

The Metalworking Outlook—p. 29 Production Engineering News—p. 65

Composite Market Averages

FINISHED STEEL PRICE INDEX: Bureau of Labor Statistics	Jan. 20 1953	Jan. 13 1953	Month Ago	December Average
(1947-1949 = 100)	130.7	130.7	130.6	130.6

AVERAGE PRICES (BUREAU OF LABOR STATISTICS)
Week Ended Jan. 20, 1953

Units are 100 lb except where otherwise noted below in parentheses. For complete description of products see insert following p. 28, STEEL, Sept. 8, 1952

Rails	$3.775	Sheets, C.R. carbon	$5.275
Track spikes	6.650	Sheets, galv.	6.915
Track bolts	9.958	Strip, C.R. carbon	5.100
Tie plates	4.775	Strip, C.R. stainless (lb)	0.325
Joint bars	4.925	Pipe, black, buttweld (100 ft)	7.099
Plates, carbon	4.100	Pipe, galv. buttweld (100 ft)	8.857
Structural shapes	4.206	Boiler tubes (100 ft)	31.663
Bars, tool steel (lb)	1.576	Tin plate (100 lb base box)	8.950
Bars, 3120 alloy	6.575	Terne plate (100 lb base box)	7.750
Bars, stainless (lb)	0.149	Wire, carbon, merchant	6.075
Bars, carbon	4.100	Wire, fence, galv.	6.458
Bars, reinforcing	4.050	Nails (100 lb kegs)	7.410
Bars, C.F. carbon	5.925	Wire, barbed (80 rod spool)	5.920
Sheets, H.R. carbon	4.125	Woven wire fence (20 rod roll)	13.720

FINISHED PRICE INDEX, Weighted Calculated by STEEL*	Jan. 22 1953	Week Ago	Month Ago	Year Ago	5 Yrs Ago
Index (1935-39 av. 100)	181.31	181.31	181.31	171.92	132.93
Index in cents per lb.	4.912	4.912	4.912	4.657	3.601

ARITHMETICAL PRICE COMPOSITES: Calculated by STEEL*					
Finished Steel NT	$110.98	$110.98	$110.98	$106.32	$78.41
No. 2 Fdry. Pig Iron, GT	55.04	55.04	55.04	52.24	39.63
Basic Pig Iron, GT	51.56	51.56	51.56	52.16	39.157
Malleable Pig Iron, GT	56.77	56.77	56.77	53.27	40.23
Steelmaking Scrap, GT	43.00	43.00	43.00	43.00	41.92

*For explanation of weighted index see STEEL, Sept. 16, 1949, p. 54; of arithmetical price composites, STEEL, Sept. 1, 1952, p. 130

Comparison of Prices

Comparative prices by districts, in cents per pound except as otherwise noted. Delivered prices based on nearest production point.

FINISHED MATERIALS	Jan. 22 1953	Week Ago	Month Ago	Year Ago	5 Yrs Ago
Bars, H.R., Pittsburgh	3.95	3.95	3.95	3.70	2.90
Bars, H.R., Chicago	3.95	3.95	3.95	3.70	2.90
Bars, H.R. del Philadelphia	4.502	4.502	4.502	4.223	3.356
Bars, C.F., Pittsburgh	4.925	4.925	4.925	4.50	3.50
Shapes, Std., Pittsburgh	3.85	3.85	3.85	3.65	2.80
Shapes, Std., Chicago	3.85	3.85	3.85	3.65	2.80
Shapes, del. Philadelphia	4.13	4.13	4.13	3.918	2.968
Plates, Pittsburgh	3.90	3.90	3.90	3.70	2.95
Plates, Chicago	3.90	3.90	3.90	3.70	2.95
Plates, Coatesville, Pa.	4.35	4.35	4.35	4.15	3.40
Plates, Sparrows Point, Md.	3.90	3.90	3.90	3.70	2.95
Plates, Claymont, Del.	4.35	4.35	4.35	4.15	3.65
Sheets, H.R., Pittsburgh	3.775	3.775	3.775	3.60-75	2.80
Sheets, H.R., Chicago	3.775	3.775	3.775	3.60	2.80
Sheets, C.R., Pittsburgh	4.575	4.575	4.575	4.35	3.55
Sheets, C.R., Chicago	4.575	4.575	4.575	4.35	3.55
Sheets, C.R., Detroit	4.775	4.775	4.775	4.55	3.71
Sheets, Galv., Pittsburgh	5.075	5.075	5.075	4.80	3.95
Strip, H.R., Pittsburgh	3.75-4.225	3.75-4.225	3.75-4.225	3.75-4.00	2.80
Strip, H.R., Chicago	3.725	3.725	3.725	3.50	2.80
Strip, C.R., Pittsburgh	5.10-5.80	5.10-5.80	5.10-5.80	4.85-5.35	3.55
Strip, C.R., Chicago	5.35	5.35	5.35	4.90	3.65
Strip, C.R., Detroit	5.30-6.05	5.30-6.05	5.30-6.05	4.85-5.60	3.71
Wire, Basic, Pittsburgh	5.10-5.225	5.10-5.225	5.10-5.225	4.85-5.10	3.675
Nails, Wire, Pittsburgh	6.20-6.35	6.20-6.35	6.20-6.35	5.90-6.20	4.70
Tin plate box, Pittsburgh	$8.95	$8.95	$8.95	$8.70	$6.70

SEMIFINISHED					
Billets, forging, Pitts. (NT)	$70.50	$70.50	$70.50	$66.00	$56.50
Wire rods, 5/16", Pitts.	4.425	4.425	4.425	4.10-30	3.05

PIG IRON, Gross Ton					
Bessemer, Pitts.	$55.50	$55.50	$55.50	$53.00	$40.00
Basic Valley	54.50	54.50	54.50	52.00	39.00
Basic, del. Phila.	59.25	59.25	59.25	56.61	42.004
No. 2 Fdry., Pitts.	55.00	55.00	55.00	52.50	39.50
No. 2 Fdry., Chicago	55.00	55.00	55.00	52.50	39.00
No. 2 Fdry., Valley	55.00	55.00	55.00	52.50	39.50
No. 2 Fdry., del. Phila.	59.75	59.75	59.75	57.11	42.504
No. 2 Fdry., Birm.	51.38	51.38	51.38	48.88	37.88
No. 2 Fdry. (Birm.) del. Cin.	58.93	58.93	58.93	55.49	40.74
Malleable, Valley	55.00	55.00	55.00	52.50	39.50
Malleable, Chicago	55.00	55.00	55.00	52.50	39.50
Charcoal, Lyles, Tenn.	68.50	68.50	68.50	66.00	55.00
Ferromanganese, Etna, Pa.	228.00	228.00	228.00	188.00	154.00*

*F.o.b. cars, Pittsburgh

SCRAP, Gross Ton (including broker's commission)					
No. 1 Heavy Melt., Pitts.	$44.00	$44.00	$44.00	$44.00	$40.50
No. 1 Heavy Melt., E. Pa.	41.50	41.50	41.50	42.50	46.00
No. 1 Heavy Melt., Chicago	42.50	42.50	42.50	42.50	39.25
No. 1 Heavy Melt., Valley	44.00	44.00	44.00	44.00	40.25
No. 1 Heavy Melt., Cleve.	43.00	43.00	43.00	43.00	39.75
No. 1 Heavy Melt., Buffalo	43.00	43.00	43.00	43.00	43.50
Rails, Rerolling, Chicago	52.50	52.50	52.50	52.50	60.00
No. 1 Cast, Chicago	44.00	44.00	44.00	49.00	63.50

(F.o.b. shipping point.)

COKE, Net Ton					
Beehive, Furn. Connlsvl.	$14.75	$14.75	$14.75	$14.75	$12.00-13.00
Beehive, Fdry. Connlsvl.	17.00	17.00	17.00	17.50	14.00-15.50
Oven, Fdry., Chicago	24.50	24.50	24.50	23.00	18.00

PIG IRON

F.o.b. furnace prices quoted under GCPR as reported to STEEL. Minimum delivered prices are approximate and do not include 3% federal tax. Key to producing companies published on second following page.

PIG IRON, Gross Ton	Basic	No. 2 Foundry	Malleable	Bessemer
Bethlehem,Pa. B2	$56.50	$57.00	$57.50	$58.00
NewYork, del.		60.78	61.28	
Newark, del.	59.52	60.02	60.52	61.02
Philadelphia, del.	59.25	59.75	60.25	60.75
Birmingham District				
AlabamaCity, Ala. R2	50.88	51.38	....	....
Birmingham, R2	50.88	51.38	....	....
Birmingham, S9		51.38	....	....
Woodward,Ala. W15	50.88	51.38	....	....
Cincinnati, del.		58.93	....	....
Buffalo District				
Buffalo, R2	54.50	55.00	55.50	....
Buffalo, H1	54.50	55.00	55.50	....
Tonawanda,N.Y. W12	54.50	55.00	55.50	....
No.Tonawanda,N.Y. T9		55.00	55.50	....
Boston, del.	65.15	65.65	66.15	....
Rochester,N.Y. del.	57.52	58.02	58.52	....
Syracuse,N.Y. del.	58.62	59.12	59.62	....
Chicago District				
Chicago I-8	54.50	55.00	55.00	55.50
Gary,Ind. U5	54.50	....	55.00	....
IndianaHarbor,Ind. I-2	54.50	....	55.00	....
So.Chicago,Ill. W14	54.50	55.00	55.00	....
So.Chicago,Ill. Y1	54.50	55.00	55.00	....
So.Chicago,Ill. U5	54.50	....	55.00	55.50
Milwaukee, del.	56.67	57.17	57.17	57.67
Muskegon,Mich., del.	....	61.30	61.30	....
Cleveland District				
Cleveland, A7	54.50	55.00	55.00	55.50
Cleveland, R2	54.50	55.00	55.00	....
Akron,O., del. from Cleve.	57.11	57.61	57.61	58.11
Lorain,O., N3	54.50	....	....	55.50
Duluth, I-3	....	....	55.00	....
Erie,Pa. I-3	54.50	55.00	55.00	55.50
Everett,Mass. E1		59.50	60.00	....
Fontana,Calif. K1	60.50	61.00	....	....
GraniteCity,Ill. G4	56.40	56.90	57.40	....
St.Louis, del. (inc. tax)	57.15	57.65	58.15	....
Ironton,Utah C11	54.50	55.00	....	....
Geneva,Utah C11	54.50	55.00	....	....
LoneStar,Tex. L6	50.50	*51.00	51.00	....
Minnequa,Colo. C10	56.50	57.50	57.50	....
Rockwood,Tenn. T3			58.50	....
Pittsburgh District				
Nevillelsland,Pa. P6		55.00	55.00	55.50
Pitts., N.&S. sides, Ambridge				
Aliquippa, del.		56.37	56.37	56.87
McKeesRocks, del.		56.04	56.04	56.54
Lawrenceville, Homestead,				
Wilmerding, Monaca, del.		56.66	56.66	57.16
Verona, Trafford, del.		57.19	57.19	57.69
Brackenridge, del.		57.45	57.45	57.95
Bessemer,Pa. U5	54.50	....	55.00	55.50
Clairton,Rankin,So.Duquesne,Pa. U5	54.50	....	....	....
McKeesport,Pa. N3	54.50	....	....	55.50
Monessen,Pa. P7	56.50	....	....	....
Sharpsville,Pa. S6		....	55.00	55.50
Steelton,Pa. B2	56.50	57.00	57.50	58.00
Swedeland,Pa. A3	58.50	59.00	59.50	60.00
Toledo,O. I-3	54.50	55.00	55.00	55.50
Cincinnati, del.	59.87	60.47	....	....
Troy,N.Y. R2	56.50	57.00	57.50	58.00
Youngstown District				
Hubbard,O. Y1	54.50	55.00	55.00	....
Youngstown,Y1	54.50	55.00	55.00	....
Youngstown,U5	54.50	....	....	55.50
Mansfield,O., del.	59.15	59.65	59.65	60.15

*Low phos, southern grade

PIG IRON DIFFERENTIALS

Silicon: Add 50 cents per ton for each 0.25% Si or percentage thereof over base grade, 1.75-2.25%, except on low phos iron on which base is 1.75-2.00%.

Phosphorus: Deduct 38 cents per ton for P content of 0.70% and over.

Manganese: Add 50 cents per ton for each 0.50% manganese over 1% or portion thereof.

Nickel: Under 0.50%, no extra; 0.50-0.74%, incl., add $2 per ton and each additional 0.25%, add $1 per ton.

BLAST FURNACE SILVERY PIG IRON, Gross Ton (Base 6.0-6.50% silicon; add $1.50 for each 0.5% Si)	
Jackson,O. G2, J1	$65.50
Buffalo, H1	66.75

ELECTRIC FURNACE SILVERY PIG IRON, Gross Ton	
(Base 14.01-14.50% silicon; add $1 for each 0.5% Si to 18%; $1 for each 0.5% Mn over 1%; $2 per gross ton premium for 0.045% max P)	
NiagaraFalls,N.Y. P15	$91.00
Keokuk,Iowa, Openhearth & Fdry., frt. allowed K2	92.50
Keokuk, Off & Fdry., 12½ lb piglets, 16½ Si, frt. allowed K2	95.50
Wenatchee, Wash., Off & Fdry., frt. allowed K2	92.50

CHARCOAL PIG IRON, Gross Ton	
(Low phos semi-cold blast; differential charged for silicon over base grade; also for hard chilling iron Nos. 5 & 6.)	
Lyles,Tenn. T3	$68.50

LOW PHOSPHORUS PIG IRON, Gross Ton	
Cleveland, intermediate, A7	$59.50
SteeltonPa. B2	62.50
Philadelphia, delivered	66.05
Troy,N.Y. R2	62.50

(Material in this department is protected by copyright and its use in any form without permission is prohibited)

Semifinished and Finished Steel Products

Mill prices quoted under GCPR as reported to STEEL, Jan. 22, 1953, cents per pound except as otherwise noted. Changes shown in italics. Code numbers following mill points indicate producing company, key on next two pages.

INGOTS, Carbon, Forging (NT)
Fontana,Calif. K1 ....$81.00
Munhall,Pa. U5 ....64.00
Seattle S24 ....75.00

INGOTS, Alloy (NT)
Detroit R7 ....$97.00
Fontana,Calif. K1 ....83.00
Houston S5 ....65.00
Midland,Pa. C18 ....57.00
Munhall,Pa. U5 ....57.00

BILLETS, BLOOMS & SLABS
Carbon, Rerolling (NT)
Bessemer,Pa. U5 ....$59.00
Clairton,Pa. U5 ....59.00
Ensley,Ala. T2 ....59.00
Fairfield,Ala. T2 ....59.00
Fontana,Calif. K1 ....78.00
Gary,Ind. U5 ....59.00
Johnstown,Pa. B2 ....59.00
Lackawanna,N.Y. B2 ....59.00
Munhall,Pa. U5 ....59.00
So.Chicago,Ill. U5 ....59.00
So.Duquesne,Pa. U5 ....59.00

Carbon, Forging (NT)
Bessemer, Pa. U5 ....$70.50
Buffalo R2 ....70.50
Canton,O. R2 ....70.50
Clairton,Pa. U5 ....70.50
Cleveland R2 ....70.50
Conshohocken,Pa. A3 ....77.50
Detroit R7 ....73.50
Ensley,Ala. T2 ....70.50
Fairfield,Ala. T2 ....70.50
Fontana,Calif. K1 ....89.50
Gary,Ind. U5 ....70.50
Geneva,Utah C11 ....70.50
Houston S5 ....78.50
Johnstown,Pa. B2 ....70.50
Lackawanna,N.Y. B2 ....70.50
LosAngeles B3 ....89.50
Munhall,Pa. U5 ....70.50
Seattle B3 ....89.50
So.Chicago R2,U5,W14 ....70.50
So.Duquesne,Pa. U5 ....70.50
So.SanFrancisco B3 ....89.50

Alloy, Forging (NT)
Bethlehem,Pa. B2 ....$76.00
Buffalo R2 ....76.00
Canton,O. R2 ....76.00
Canton,O. T7 ....78.60
Conshohocken,Pa. A3 ....83.00
Detroit R7 ....79.00
Fontana,Calif. K1 ....95.00
Gary,Ind. U5 ....76.00
Houston S5 ....84.00
Ind.Harbor,Ind. Y1 ....76.00
Johnstown,Pa. B2 ....76.00
Lackawanna,N.Y. B2 ....76.00
LosAngeles B3 ....96.00
Massillon,O. R2 ....76.00
Midland,Pa. C18 ....76.00
Munhall,Pa. U5 ....76.00
So.Chicago R2,U5,W14 ....76.00
So.Duquesne,Pa. U5 ....76.00
Struthers,O. Y1 ....76.00
Warren,O. C17 ....76.00

ROUNDS, SEAMLESS TUBE (NT)
Buffalo R2 ....$87.50
Canton,O. R2 ....87.50
Cleveland R2 ....87.50
Fontana,Calif. K1 ....108.50
Gary,Ind. U5 ....87.50
Massillon,O. R2 ....87.50
So.Chicago,Ill. R2 ....87.50
So.Duquesne,Pa. U5 ....87.50

SHEET BARS (NT)
Fontana,Calif. K1 ....$63.18

SKELP
Aliquippa,Pa. J5 ....$3.65
Munhall,Pa. U5 ....3.50
Warren,O. R2 ....3.50
Youngstown R2, U5 ....3.50

WIRE RODS
Alton,Ill. L1 ....4.70
AlabamaCity,Ala. R2 ....4.325
Buffalo W12 ....4.325
Cleveland A7 ....4.325
Donora,Pa. A7 ....4.325
Fairfield,Ala. T2 ....4.325
Fontana,Calif. K1 ....5.125
Houston S5 ....4.725
Johnstown,Pa. B2 ....4.325
Joliet,Ill. A7 ....4.325
KansasCity,Mo. S6 ....4.665
LosAngeles B3 ....5.125
Minnequa,Colo. C10 ....4.575
Monessen,Pa. P7 ....4.525
No.Tonawanda,N.Y. B11 ....4.325
Pittsburg,Calif. C11 ....4.975
Portsmouth,O. P12 ....4.525
Roebling,N.J. R5 ....4.425
So.Chicago,Ill. R2 ....4.325
SparrowsPoint,Md. B2 ....4.425
Sterling,Ill.(3) N15 ....4.325
Struthers,O. Y1 ....4.325
Torrance,Calif. C11 ....5.125
Worcester,Mass. A7 ....4.625

SHEET STEEL PILING
Ind.Harbor, Ind. I-2 ....4.675
Lackawanna,N.Y. B2 ....4.675
Munhall,Pa. U5 ....4.675
So.Chicago,Ill. U5 ....4.675

STRUCTURALS
Carbon Steel Stand. Shapes
AlabamaCity,Ala. R2 ....3.85
Aliquippa,Pa. J5 ....3.85
Bessemer,Ala. T2 ....3.85
Bethlehem,Pa. B2 ....3.90
Clairton,Pa. U5 ....3.85
Fairfield,Ala. T2 ....3.85
Fontana,Calif. K1 ....4.50
Gary,Ind. U5 ....3.85
Geneva,Utah C11 ....3.85
Houston S5 ....4.25
Ind.Harbor,Ind. I-2 ....3.85
Johnstown,Pa. B2 ....3.90
KansasCity,Mo. S5 ....4.45
Lackawanna,N.Y. B2 ....3.90
LosAngeles B3 ....4.45
Minnequa,Colo. C10 ....4.30
Munhall,Pa. U5 ....3.85
Niles,Calif.(22) P1 ....4.56
Phoenixville,Pa. P4 ....6.10
Seattle B3 ....4.50
So.Chicago,Ill. U5 W14 ....3.85
So.SanFrancisco B3 ....4.40
Torrance,Calif. C11 ....4.45
Weirton,W.Va. W6 ....4.10

Wide Flange
Bethlehem,Pa. B2 ....3.90
Clairton,Pa. U5 ....3.85
Fontana,Calif. K1 ....4.65
Johnstown,Pa. B2 ....3.90
Lackawanna,N.Y. B2 ....3.90
Munhall,Pa. U5 ....3.85
So.Chicago,Ill. U5 ....3.85

Alloy Stand. Shapes
Clairton,Pa. U5 ....4.725
Fontana,Calif. K1 ....5.925
Gary,Ind. U5 ....4.725
Munhall,Pa. U5 ....4.725
So.Chicago,Ill. U5 ....4.725

H.S., L.A. Stand. Shapes
Aliquippa,Pa. J5 ....5.80
Bessemer,Ala. T2 ....5.80
Bethlehem,Pa. B2 ....5.80
Clairton,Pa. U5 ....5.80
Fairfield,Ala. T2 ....5.80
Fontana,Calif. K1 ....6.15
Gary,Ind. U5 ....5.80
Geneva,Utah C11 ....5.80
Ind.Harbor,Ind. I-2 ....5.80
Ind.Harbor,Ind. Y1 ....6.30
Johnstown,Pa. B2 ....5.80
Lackawanna,N.Y. B2 ....5.80
LosAngeles B3 ....6.35
Munhall,Pa. U5 ....5.80
Seattle B3 ....6.40
So.Chicago,Ill. U5 ....5.80
So.SanFrancisco B3 ....6.30
Struthers,O. Y1 ....6.30

H.S., L.A. Wide Flange
Aliquippa,Pa. J5 ....5.80
Bethlehem,Pa. B2 ....5.80
Lackawanna,N.Y. B2 ....5.80
Munhall,Pa. U5 ....5.75
So.Chicago,Ill. U5 ....5.75

BEARING PILES
Munhall,Pa. U5 ....3.85
So.Chicago,Ill. U5 ....3.85

PLATES,High-Strength Low-Alloy
Aliquippa,Pa. J5 ....5.95
Bessemer,Ala. T2 ....5.95
Clairton,Pa. U5 ....5.95
Cleveland J5, R2 ....5.95
Conshohocken,Pa. A3 ....6.20
Ecorse,Mich. G5 ....6.90
Fairfield,Ala. T2 ....5.95
Fontana,Calif.(30) K1 ....6.65
Gary,Ind. U5 ....5.95
Geneva, Utah C11 ....5.95
Ind.Harbor,Ind. I-2 ....5.95
Ind.Harbor,Ind. Y1 ....6.45
Johnstown,Pa. B2 ....5.95
Munhall,Pa. U5 ....5.95
Pittsburgh J5 ....5.95
Seattle B3 ....6.85
Sharon,Pa. S3 ....5.95
So. Chicago,Ill. U5 ....5.95
SparrowsPoint,Md. B2 ....5.95
Warren,O. R2 ....5.95
Youngstown Y1 ....6.45
Youngstown U5 ....5.95

PLATES, Open-Hearth Alloy
Claymont,Del. C22 ....5.35
Coatesville,Pa. L7 ....5.75
Conshohocken,Pa. A3 ....5.55
Fontana,Calif. K1 ....6.20
Gary,Ind. U5 ....5.25
Johnstown,Pa. B2 ....5.20
Munhall,Pa. U5 ....5.25
Sharon,Pa. S3 ....5.70
So.Chicago,Ill. U5 ....5.25
SparrowsPoint,Md. B2 ....5.25

FLOOR PLATES
Cleveland J5 ....4.95
Conshohocken,Pa. A3 ....4.95
Ind.Harbor,Ind. I-2 ....4.95
Munhall,Pa. U5 ....4.95
So.Chicago,Ill. U5 ....4.95

PLATES, Ingot Iron
Ashland,c.l. (15) A10 ....4.15
Cleveland,c.l. R2 ....4.50
Warren,O., c.l. R2 ....4.50

PLATES, Carbon Steel
AlabamaCity,Ala. R2 ....3.90
Aliquippa,Pa. J5 ....3.90
Ashland,Ky. (15) A10 ....3.90
Bessemer,Ala. T2 ....3.90
Clairton,Pa. U5 ....3.90
Claymont,Del. C22 ....4.35
Cleveland J5, R2 ....3.90
Coatesville,Pa. L7 ....4.35
Conshohocken,Pa. A3 ....4.35
Ecorse,Mich. G5 ....4.45
Fairfield,Ala. T2 ....3.90
Fontana,Calif.(30) K1 ....4.60
Gary,Ind. U5 ....3.90
GraniteCity,Ill. G4 ....4.60
Geneva,Utah C11 ....3.90
Harrisburg,Pa. C5 ....6.50
Houston S5 ....4.30
Ind.Harbor,Ind. I-2, Y1 ....3.90
Johnstown,Pa. B2 ....3.90
Lackawanna,N.Y. B2 ....3.90
Minnequa,Colo. C10 ....4.70
Munhall,Pa. U5 ....3.90
Pittsburgh J5 ....3.90
Seattle B3 ....4.80
Sharon,Pa. S3 ....4.15
So.Chicago,Ill. U5, W14 ....3.90
SparrowsPoint,Md. B2 ....3.90
Steubenville,O. W10 ....3.90
Warren,O. R2 ....3.90
Weirton,W.Va. W6 ....4.20
Youngstown R2, U5, Y1 ....3.90

PLATES, Carbon A.R.
Fontana,Calif. K1 ....7.20
Geneva,Utah C11 ....5.65

PLATES, Wrought Iron
(Add 4.75 to base and extras)
Economy,Pa. B14 ....8.60

BARS, Hot-Rolled Carbon
AlabamaCity,Ala. R2 ....3.95
Aliquippa,Pa. J5 ....3.95
Alton,Ill. L1 ....4.50
Atlanta,Ga. A11 ....4.50
Bessemer,Ala. T2 ....3.95
Buffalo R2 ....3.95
Canton,O. R2 ....3.95
Clairton,Pa. U5 ....3.95
Cleveland R2 ....3.95
Detroit R7 ....4.10
Ecorse,Mich. G5 ....4.30
Emeryville,Calif. J7 ....4.70
Fairfield,Ala. T2 ....3.95
Fontana,Calif. K1 ....4.65
Gary,Ind. U5 ....3.95
Houston S5 ....4.35
Ind.Harbor,Ind. I-2 Y1 ....3.95
Johnstown,Pa. B2 ....3.95
KansasCity,Mo. S5 ....4.55
Lackawanna,N.Y. B2 ....3.95
LosAngeles B3 ....4.65
Milton,Pa. B6 ....4.55
Minnequa,Colo. C10 ....4.40
Niles,Calif. P1 ....4.65
N.Tonawanda,N.Y. B11 ....3.95
Pittsburg,Calif. C11 ....4.65
Pittsburgh J5 ....3.95
Seattle B3, N14 ....4.70
So.Chicago R2,U5,W14 ....3.95
So.Duquesne,Pa. U5 ....3.95
So.SanFran.,Calif. B3 ....4.70
Sterling,Ill. N15 ....4.55
Struthers,O. Y1 ....3.95
Torrance,Calif. C11 ....4.65
Weirton,W.Va. W6 ....4.10
Youngstown R2, U5 ....3.95

BAR SIZE ANGLES, S. Shapes
Aliquippa,Pa. J5 ....3.95
Atlanta A11 ....4.50
Niles,Calif. P1 ....4.65
SanFrancisco S7 ....5.00

BAR SIZE ANGLES, H.R CARBON
Bethlehem,Pa. B2 ....4.15

BARS, Hot-Rolled Alloy
Bethlehem,Pa. B2 ....4.675
Buffalo R2 ....4.675
Canton,O. R2 ....4.675
Canton,O. T7 ....4.72
Clairton,Pa. U5 ....4.675
Detroit R7 ....4.825
Ecorse,Mich. G5 ....5.025
Fontana,Calif. K1 ....5.725
Gary,Ind. U5 ....4.675
Houston S5 ....5.075
Ind.Harbor,Ind. I-2,Y1 ....4.675
Johnstown,Pa. B2 ....4.675
KansasCity,Mo. S5 ....5.275
Lackawanna,N.Y. B2 ....4.675
LosAngeles B3 ....5.725
Massillon,O. R2 ....4.675
Midland,Pa. C18 ....4.675
So.Chicago R2,U5,W14 ....4.675
So.Duquesne,Pa. U5 ....4.675
Struthers,O. Y1 ....4.675
Warren,O. C17 ....4.675
Youngstown U5 ....4.675

BAR SHAPES, Hot-Rolled Alloy
Clairton,Pa. U5 ....4.925
Gary,Ind. U5 ....4.925
Youngstown U5 ....4.925

BARS & SMALL SHAPES, H. R., High-Strength Low-Alloy
Aliquippa,Pa. J5 ....5.925
Bessemer,Ala. T2 ....5.925
Bethlehem,Pa. B2 ....5.925
Clairton,Pa. U5 ....5.925
Cleveland R2 ....5.925
Ecorse,Mich. G5 ....6.025
Fairfield,Ala. T2 ....5.925
Fontana,Calif. K1 ....6.725
Gary,Ind. U5 ....5.925
Ind.Harbor,Ind. I-2 ....5.925
IndianaHarbor,Ind. Y1 ....6.425
Johnstown,Pa. B2 ....5.925
Lackawanna,N.Y. B2 ....5.925
LosAngeles B3 ....6.625
Pittsburgh J5 ....5.925
Seattle B3 ....6.675
So.Duquesne,Pa. U5 ....5.925
So.SanFrancisco B3 ....6.675
Struthers,O. Y1 ....6.425
Youngstown U5 ....5.925

BARS, Cold-Finished Carbon
Ambridge,Pa. W18 ....4.925
BeaverFalls,Pa. R2 ....4.925
BeaverFalls,Pa. M12 ....4.925
Buffalo B5 ....4.975
Camden,N.J. P13 ....5.375
Carnegie,Pa. C12 ....4.925
Chicago B5 ....4.925
Chicago W18 ....4.925
Cleveland A7, C20 ....4.925
Detroit P17, R7 ....5.075
Donora,Pa. A7 ....4.925
Elyria,O. W8 ....4.925
FranklinPark,Ill. N5 ....4.925
Gary,Ind. R2 ....4.925
GreenBay, Wis. F7 ....4.925
Hammond,Ind. L2, M13 ....4.925
Hartford,Conn. R2 ....5.475
LosAngeles R2 ....6.375
Mansfield,Mass. B5 ....5.475
Massillon,O. R2, R8 ....4.925
Monaca,Pa. S17 ....4.925
Newark,N.J. W18 ....5.375
Plymouth,Mich. P5 ....5.475
Pittsburgh J5 ....4.925
Putnam,Conn. W18 ....5.475
Readville,Mass. C14 ....5.475
St. Louis,Mo. M5 ....5.30
So.Chicago,Ill. W14 ....4.925
SpringCity,Pa. K3 ....5.375
Struthers,O. Y1 ....4.925
Waukegan,Ill. A7 ....4.925
Youngstown Y1 ....4.925
Youngstown F3 ....4.925

BARS, Cold-Finished Alloy
Ambridge,Pa. W18 ....6.00
BeaverFalls,Pa. M12 ....6.00
Bethlehem,Pa. B2 ....6.00
Buffalo B5 ....6.00
Camden,N.J. P13 ....6.40
Canton,O. R2 ....6.00
Canton,O. T7 ....5.99
Carnegie,Pa. C12 ....6.00
Chicago B5 ....6.00
Chicago W18 ....6.00
Cleveland A7 ....6.05
Cleveland C20 ....6.00
Detroit P17, R7 ....6.15
Donora,Pa. A7 ....6.05
Elyria,O. W8 ....6.00
Gary,Ind. R2 ....6.00
Hammond,Ind. L2, M13 ....6.00
Hartford,Conn. R2 ....6.45
Lackawanna,N.Y. R2 ....6.00
Mansfield,Mass. B5 ....6.45
Massillon,O. R2, R8 ....6.00
Midland,Pa. C18 ....6.00
Monaca,Pa. S17 ....6.00
Newark,N.J. W18 ....6.35
Plymouth,Mich. P5 ....6.20
So.Chicago,Ill. R2, W14 ....6.00
SpringCity,Pa. K3 ....6.20
Struthers,O. Y1 ....6.00
Warren,O. C17 ....6.00
Waukegan,Ill. A7 ....6.05
Worcester,Mass. A7 ....6.35
Youngstown Y1 ....6.00
Youngstown F3 ....6.00

BARS, Reinforcing (Fabricators)
AlabamaCity,Ala. R2 ....3.95
Atlanta A11 ....4.50
Buffalo R2 ....3.95
Cleveland R2 ....3.95
Emeryville,Calif. J7 ....4.70
Fairfield,Ala. T2 ....3.95
Fontana,Calif. K1 ....4.65
Gary,Ind. U5 ....3.95
Houston S5 ....4.75
Ind.Harbor,Ind. I-2, Y1 ....3.95
Johnstown,Pa. B2 ....3.95
KansasCity,Mo. S5 ....4.55
Lackawanna,N.Y. B2 ....3.95
LosAngeles B3 ....4.65
Milton,Pa. B6 ....4.55
Minnequa,Colo. C10 ....4.75
Niles,Calif. P1 ....4.65
Pittsburg,Calif. C11 ....4.65
Pittsburgh J5 ....3.95
SandSprings, Okla. S5 ....4.55
Seattle B3, N14 ....4.70
So.Chicago,Ill. R2 ....3.95
So.Duquesne,Pa. U5 ....3.95
So.SanFrancisco B3 ....4.70
SparrowsPoint,Md. B2 ....3.95
Sterling,Ill.(1) N15 ....4.70
Torrance,Calif. C11 ....4.65
Youngstown R2, U5 ....3.95

BARS, Reinforcing (Fabricated; to consumers)
Huntington,W.Va. W7 ....5.50
Johnstown, ¼-1" B2 ....5.25
LosAngeles B3 ....5.45
Marion,O. P11 ....5.25
Seattle B3, N14 ....5.80
So.SanFrancisco B3 ....5.45
SparrowsPt., ¼-1" B2 ....5.25
Williamsport,Pa. S19 ....5.35

RAIL STEEL BARS
Chicago Hts.(3,4) C2 ....5.00
Chicago Hts.(3,4) I-2 ....4.75
Franklin,Pa.(3,4) P5 ....5.00
FortWorth,Tex.(26) T4 ....5.10
Huntngt,W.Va.(3) W7 ....5.75
Marion,O.(3) P11 ....4.75
Moline,Ill.(3) R2 ....4.65
Tonawanda(3,4) B12 ....5.00
Williamsport(3) S19 ....5.25
Williamsport(4) S19 ....5.35

BARS, Wrought Iron
(Add 4.75 to base and extras)
Economy,Pa.(8 R.) B14 ....9.60
Economy,Pa.(3 R.) B14 ....11.90
Economy(Staybolt) B14 ....12.20
McK.Rks.(Staybolt) L5 ....14.50
McK.Rks.(8 R.) L5 ....9.60
McK.Rks.(3 R.) L5 ....13.00

SHEETS, Hot-Rolled Steel
(18 gage and heavier)
AlabamaCity,Ala. R2 ....3.775
Ashland,Ky.(8) A10 ....3.775
Butler,Pa. A10 ....3.775
Cleveland J5, R2 ....3.775
Conshohocken,Pa. A3 ....4.175
Detroit M1 ....4.40
Ecorse,Mich. G5 ....3.925
Fairfield,Ala. T2 ....3.775
Fontana,Calif. K1 ....4.825
Gary,Ind. U5 ....3.775
Geneva,Utah C11 ....3.875
GraniteCity,Ill. G4 ....4.30
Ind.Harbor,Ind. I-2, Y1 ....3.775
Irvin,Pa. U5 ....3.775
Lackawanna,N.Y. B2 ....3.775
Munhall,Pa. U5 ....3.775
Niles,O. N12 ....5.425
Pittsburg,Calif. C11 ....4.425
Pittsburgh J5 ....3.775
Sharon,Pa. S3 ....4.175
So.Chicago,Ill. W14 ....3.775
SparrowsPoint,Md. B2 ....3.775
Steubenville,O. W10 ....3.775
Torrance,Calif. C11 ....4.475
Warren,O. R2 ....3.775
Weirton,W.Va. W6 ....3.775
WestLeechburg,Pa. A4 ....3.925
Youngstown U5, Y1 ....3.775

SHEETS, H.R. (19 gage)
AlabamaCity,Ala. R2 ....4.925
Dover,O. R1 ....5.825
Mansfield,O. E6 ....5.65
Niles,O. N12 ....5.675
Torrance,Calif. C11 ....5.575

SHEETS, H.R. (14 ga. heavier) High-Strength Low-Alloy
Cleveland J5, R2 ....5.675
Conshohocken,Pa. A3 ....5.925
Ecorse,Mich. G5 ....6.225
Fairfield,Ala. T2 ....5.675
Fontana,Calif. K1 ....6.775
Gary,Ind. U5 ....5.675
Ind.Harbor,Ind. I-2 ....5.675
Ind.Harbor,Ind. Y1 ....5.675
Irvin,Pa. U5 ....5.675
Lackawanna(3) R2 ....5.675
Munhall U5 ....5.675
Pittsburgh J5 ....5.675
Sharon,Pa. S3 ....5.675
So.Chicago,Ill. U5 ....5.675
SparrowsPoint(3) B2 ....5.675
Warren,O. R2 ....5.675
Weirton,W.Va. W6 ....6.025
Youngstown U5 ....5.675
Youngstown Y1 ....6.175

SHEETS, Cold-Rolled High-Strength Low-Alloy
Cleveland J5, R2 ....6.925
Ecorse,Mich. G5 ....7.475
Fontana,Calif. K1 ....7.575
Gary,Ind. U5 ....6.925
IndianaHarbor,Ind. Y1 ....7.425
IndianaHarbor,Ind. I-2 ....6.925
Irvin,Pa. U5 ....6.925
Lackawanna(3) B2 ....6.925
Pittsburgh J5 ....6.925
SparrowsPoint(3) B2 ....6.925
Warren,O. R2 ....6.925
Weirton,W.Va. W6 ....7.275
Youngstown Y1 ....7.425

SHEETS, Cold-Rolled Steel (Commercial Quality)

Butler,Pa. A10 ..... 4.65c
Cleveland,Ky. R2 ..... 4.65c
Ecorse,Mich. G5 ..... 4.75c
Fairfield,Ala. T2 ..... 4.65c
Follansbee,W.Va. F4 ..... 4.75c
Fontana,Calif. K1 ..... 4.65c
Gary,Ind. U5 ..... 4.65c
GraniteCity,Ill. G4 ..... 4.75c
Ind.Harbor,Ind. I-2,Y1 4.65c
Irvin,Pa. U5 ..... 4.65c
Lackawanna,N.Y. B2 ..... 4.65c
Middletown,O. A10 ..... 4.65c
Pittsburg,Calif. C11 ..... 4.65c
Pittsburgh,Pa. J5 ..... 4.65c
SparrowsPoint,Md. B2 ..... 4.65c
Steubenville,O. W10 ..... 4.65c
Warren,O. R2 ..... 4.65c
Weirton,W.Va. W6 ..... 4.65c
Youngstown Y1 ..... 4.65c

SHEETS, Galv'd No. 10 Steel

AlabamaCity,Ala. R2 ..... 5.65c
Ashland,Ky.(8) A10 ..... 5.65c
Canton,O. R2 ..... 5.65c
Delphos,O. N6 ..... 5.65c
Dover,O. R1 ..... 5.75c
Fairfield,Ala. T2 ..... 5.65c
Gary,Ind. U5 ..... 5.65c
GraniteCity,Ill. G4 ..... 5.80
Ind.Harbor,Ind. I-2 ..... 5.65c
Irvin,Pa. U5 ..... 5.65c
Kokomo,Ind.(13) C16 ..... 5.75c
MartinsFerry,O. W10 ..... 5.65c
Niles,O. N12 ..... 6.25c
Pittsburg,Calif. C11 ..... 5.82c
SparrowsPoint,Md. B2 ..... 5.65c
Steubenville,O. W10 ..... 5.65c
Torrance,Calif. C11 ..... 5.82c
Weirton,W.Va. W6 ..... 5.65c

SHEETS, Galvanized No. 10, High-Strength Low-Alloy

Irvin,Pa. U5 ..... 7.65c
SparrowsPoint(20) B2 ..... 7.65c

SHEETS, Galvannealed Steel

Canton,O. R2 ..... 5.65c
Irvin,Pa. U5 ..... 5.65c
Kokomo,Ind.(13) C16 ..... 5.75c
Niles,O. N12 ..... 6.35c

SHEETS, ZINCGRIP Steel No. 10

Butler,Pa. A10 ..... 5.35c
Middletown,O. A10 ..... 5.35c

SHEETS, Electro Galvanized

Cleveland R2 (28) 5.95c
Niles,O. R2 (28) 5.95c
Weirton,W.Va. W6 ..... 5.75c

SHEETS, Well Casing

Fontana,Calif. K1 ..... 7.35

BLUED Stock, 29 ga.

Yorkville,O. W10 ..... 7.00
Follansbee,W.Va. F4 ..... 7.10
Follansbee(23) F4 ..... 6.45c

SHEETS, Enameling Iron

Ashland,Ky.(8) A10 ..... 4.95c
Cleveland R2 ..... 4.95c
Gary,Ind. U5 ..... 4.95c
GraniteCity,Ill. G4 ..... 5.05c
Ind.Harbor,Ind. I-2 ..... 4.95c
Irvin,Pa. U5 ..... 4.95c
Middletown,O. A10 ..... 4.95c
Youngstown Y1 ..... 4.95c

BLACK PLATE (Base Box)

Aliquippa,Pa. J5 ..... $6.25
Fairfield,Ala. T2 ..... 6.60
Gary,Ind. U5 ..... 6.50
GraniteCity,Ill. G4 ..... 6.70
Ind.Harbor,Ind. I-2, Y1 6.50
Irvin,Pa. U5 ..... 6.50
Niles,O. R2 ..... 6.50
Pittsburg,Calif. C11 ..... 7.25
SparrowsPoint,Md. B2 ..... 6.60
Warren,O. R2 ..... 6.50
Weirton,W.Va. W6 ..... 6.50
Yorkville,O. W10 ..... 6.50

HOLLOWARE ENAMELING Black Plate (29 gage)

Follansbee,W.Va. F4 ..... 6.10
Gary,Ind. U5 ..... 6.10
GraniteCity,Ill. G4 ..... 6.30
Ind.Harbor,Ind. Y1 ..... 6.10
Irvin,Pa. U5 ..... 6.10
Yorkville,O. W10 ..... 6.35

SHEETS, Culvert No. 16

	Cu Alloy	Cu Fe
Ashland,Ky. A10	5.85c	
Canton,O. R2	5.95c	6.35c
Fairfield,Ala. T2	5.85c	6.25c
Gary,Ind. U5	5.85c	6.25c
Ind.Harbor,Ind. I-2	5.85c	6.25c
Irvin,Pa. U5	5.85c	6.25c
Kokomo,Ind. C16	6.35c	
Martin,Fy.,O.W10	5.85c	
Pittsburg,Cal.C11	6.62c	
SparrowsPt. B2	5.85c	
Torrance,Cal.C11	6.62c	

SHEETS, Culvert, No. 16 Pure Iron

Ashland,Ky. A10 ..... 6.15c
Fairfield,Ala. T2 ..... 6.15c
MartinsFerry,O. W10 ..... 6.15c

SHEETS, Hot-Rolled Ingot Iron 18 Gage and Heavier

Ashland,Ky.(8) A10 ..... 4.05c
Cleveland R2 ..... 4.35c
Ind.Harbor,Ind. I-2 ..... 4.05c
Warren,O. R2 ..... 4.35c

SHEETS, Cold-Rolled Ingot Iron

Butler,Pa. A10 ..... 5.05c
Cleveland R2 ..... 5.15c
Middletown,O. A10 ..... 5.05c
Warren,O. R2 ..... 5.15c

SHEETS, Galvanized Ingot Iron No. 10 flat

Ashland,Ky.(8) A10 ..... 5.35c
Canton,O. R2 ..... 5.85c

SHEETS, ZINCGRIP Ingot Iron

Butler,Pa. A10 ..... 5.55c
Middletown,O. A10 ..... 5.55c

SHEETS, ALUMINIZED

Butler,Pa. A10 ..... 7.45c

TIN PLATE, American 1.25 Coke (Base Box)	lb	1.50 lb
Aliquippa,Pa. J5	$8.20	$8.95
Fairfield,Ala. T2	8.80	9.60
Gary,Ind. U5	8.70	8.95
Ind.Har. I-2, Y1	8.70	8.95
Irvin,Pa. U5	8.70	8.95
Pitts.,Cal. C11	9.45	9.70
Sp.Pt.,Md. B2	8.80	9.60
Warren,O. R2	8.70	
Weirton,W.Va.W6	8.70	8.95
Yorkville,O. W10	8.70	8.95

MANUFACTURING TERNES (Special Coated)

Fairfield,Ala. T2 ..... $7.85
Gary,Ind. U5 ..... 7.75
Irvin,Pa. U5 ..... 7.75
Yorkville,O. W10 ..... 7.75

SHEETS, LT. Coated Ternes, 6 lb

Yorkville,O. W10 ..... $8.65

SHEETS, Mfg. Ternes, 8 lb (Commercial Quality)

Gary,Ind. U5 ..... $9.75
Yorkville,O. W10 ..... 9.75

SHEETS, Long Terne Steel (Commercial Quality)

	Field	Armature	Electric	Motor	Dynamo
BeechBottom,W.Va.W10	5.475				
Gary,Ind. U5	5.475				
Mansfield,O. E6	6.60				
Middletown,O. A10	5.475				
Niles,O. N12	6.275				
Weirton,W.Va. W6	5.475				

SHEETS, Long Terne, Ingot Iron

Middletown,O. A10 ..... 5.875

ROOFING SHORT TERNES (8 lb Coated)

Gary,Ind. U5 ..... 9.75

STRIP, Hot-Rolled High-Strength Low-Alloy

Bessemer,Ala. T2 ..... 5.65
Conshohocken,Pa. A3 ..... 5.90
Ecorse,Mich. G5 ..... 6.30
Fairfield,Ala. T2 ..... 5.65
Fontana,Calif. K1 ..... 6.55
Gary,Ind. U5 ..... 5.65
Ind.Harb.,Ind. I-2 ..... 5.65
Ind.Harbor,Ind. Y1 ..... 6.15
Lackawanna,N.Y. B2 ..... 5.70
LosAngeles(25) B3 ..... 6.10
Seattle(25) B5 ..... 6.65
Sharon,Pa. S3 ..... 6.65
So.SanFrancisco(25) B3 6.40
SparrowsPoint,Md. B2 ..... 5.70
Warren,O. R2 ..... 5.65
Weirton,W.Va. W6 ..... 6.10
Youngstown Y1 ..... 6.15
Youngstown U5 ..... 6.65

STRIP, Cold-Rolled High-Strength Low-Alloy

Cleveland J1 ..... 7.45
Cleveland A7 ..... 7.30
Dover,O. G6 ..... 8.00
Ecorse,Mich. G5 ..... 8.15
Lackawanna,N.Y. B2 ..... 7.90
Sharon,Pa. S3 ..... 7.30
SparrowsPoint,Md. B2 ..... 7.90
Warren,O. R2 ..... 7.30
Weirton,W.Va. W6 ..... 7.95
Youngstown Y1 ..... 7.80

STRIP, Hot-Rolled Carbon

Ala.City,Ala.(27) R2 ..... 3.725
Alton,Ill. L1 ..... 4.20
Ashland,Ky.(8) A10 ..... 3.725
Atlanta,Ill. A11 ..... 4.275
Bessemer,Ala. T2 ..... 3.725
Bridgeport,Con.(10)S15 4.225
Buffalo(27) R2 ..... 3.725
Butler,Pa. A10 ..... 3.725
Carnegie,Pa. S18 ..... 4.225
Conshohocken,Pa. A3 ..... 4.125
Detroit M1 ..... 4.40
Ecorse,Mich. G5 ..... 4.025
Fairfield,Ala. T2 ..... 3.725
Fontana,Calif. K1 ..... 4.175
Gary,Ind. U5 ..... 3.725
Houston,Tex. S5 ..... 4.125
Ind.Harbor,Ind. I-2,Y1 3.725
Johnstown,Pa.(25) B2 ..... 3.725
Kansas City,Mo.(9) S6 ..... 4.325
Lackawanna,N.Y.(32) B2 3.725
LosAngeles(25) B3 ..... 4.475
Milton,Pa. B6 ..... 4.50
Minnequa,Colo. C10 ..... 4.775
New Britain(10) S15 ..... 4.225
N.Tonawanda,N.Y. B11 3.725
Pittsburg,Calif. C11 ..... 4.475
Riverdale,Ill. A1 ..... 4.25
SanFrancisco S7 ..... 5.00
Seattle(25) B3 ..... 4.725
Seattle N14 ..... 4.75
Sharon,Pa. S3 ..... 4.225
So.Chicago,Ill. W14 ..... 3.725
So.SanFrancisco(25) B2 4.475
SparrowsPoint,Md. B2 ..... 3.725
Sterling,Ill. N15 ..... 4.725
Torrance,Calif. C11 ..... 4.475
Warren,O. R2 ..... 3.725
Weirton,W.Va. W6 ..... 3.825
WestLeechburg,Pa. A4 ..... 3.975
Youngstown U5, Y1 ..... 3.725

STRIP, Hot-Rolled Alloy

Bridgeprt,Conn.(10) S15 6.65
Carnegie,Pa. S18 ..... 6.45
Fontana,Calif. K1 ..... 7.30
Gary,Ind. U5 ..... 6.10
Houston,Tex. S5 ..... 6.50
KansasCity,Mo. S5 ..... 6.70
Midland,Pa. C18 ..... 6.85
NewBritn.,Conn.(10) S15 6.65
Sharon,Pa. S3 ..... 6.45
Youngstown U5 ..... 6.10

STRIP, Cold-Rolled Carbon

Anderson,Ind.(10) G6 ..... 5.50
Bridgeprt,Conn.(10) S15 5.50
Butler,Pa. A10 ..... 5.10
Cleveland A7, J5 ..... 5.10
Dearborn,Mich. D3 ..... 6.05
Detroit D2 ..... 5.60
Detroit M1 ..... 5.45
Dover,O.(40) G6 ..... 5.60
Ecorse,Mich. G5 ..... 5.30
Follansbee,W.Va. F4 ..... 5.10
Fontana,Calif. K1 ..... 6.75
Franklin Park,Ill.(40)T6 5.35
Ind.Harbor,Ind. I-2 ..... 5.35
Lackawanna,N.Y. B2 ..... 5.10
LosAngeles C1 ..... 6.85
Mattapan,Mass. T6 ..... 5.95
Middletown,O. A10 ..... 5.10
NewBritain(10) S15 ..... 5.80

STRIP, Cold-Finished, Spring Steel (Annealed)	0.26-0.40C	0.41-0.60C	0.61-0.80C	0.81-1.05C	1.06-1.35C
Berea,O. C7		6.80	7.40	9.35	11.65
Bridgeport,Conn.(10) S15	5.80	7.65	8.25	10.20	12.50
Bristol,Conn. W1			8.55	10.50	
Carnegie,Pa. S18		7.65	8.25	10.20	12.50
Cleveland A7	5.10	7.30	8.25	10.20	12.50
Dearborn,Mich. D2	6.05	7.90	8.50		
Detroit D2	6.45	7.50	8.10		
Dover,O. G6	5.70	7.65	8.25	10.20	12.50
FranklinPark,Ill. T6	5.45	7.40	8.40	10.35	12.65
Harrison,N.J. C18			8.55	10.50	12.80
Mattapan,Mass. T6	5.95	7.60	8.55	10.50	12.80
NewBritn.,Conn.(10) S15	5.80	7.65	8.25	10.20	12.50
NewCastle,Pa. B4	5.80	7.65	8.25	10.20	
NewCastle,Pa. K5	5.80	7.65	8.25	10.20	12.50
NewHaven,Conn. D2	6.70	7.60	8.20		
NewYork W3		7.50	8.55	10.50	12.80
Pawtucket,R.I. N8, Cleve.orPitts.Base		7.65	8.25	10.20	12.50
Worcester,Mass. Base	6.30	7.65	8.55	10.50	12.80
Sharon,Pa. S3	5.80	7.65	8.25	10.20	12.50
Trenton,N.J. R5		7.65	8.55	10.50	12.80
Wallingford,Conn. W2	6.30	7.60	8.20	10.15	12.65
Warren,O. T6	6.20	7.65	8.25	10.20	12.50
Weirton,W.Va. W6	5.80	7.65	8.25	10.20	12.50
Worcester,Mass. A7	5.40	7.60	8.55	10.50	12.80
Worcester,Mass. T6	5.95	7.60	8.55	10.50	12.80
Youngstown C8		7.65	8.25	10.20	12.50

Spring Steel (Tempered)

Trenton,N.J. R5 (29)			10.50	12.50	15.25
Harrison,N.J. C18			10.50	12.50	15.35
NewYork W3			10.50	12.50	15.35
Youngstown C8			10.50	12.50	15.35

STRIP, Cold-Rolled Alloy Steel

Bridgeprt,Conn.(10)S15 12.15
Carnegie,Pa. S18 ..... 12.60
Cleveland A7 ..... 11.40
Dover,O. G6 ..... 11.50
Fontana,Calif. K1 ..... 13.05
Harrison,N.J. C18 ..... 12.00
Midland,Pa. C18 ..... 12.00
NewBritn.,Conn.(10)S15 12.15
Pawtucket,R.I.(11) N8 12.15
Pawtucket,R.I.(12) N8 12.45
Sharon,Pa. S3 ..... 12.00
Worcester,Mass. A7 ..... 11.70
Youngstown, C8 ..... 12.00

STRIP, Hot-Rolled Ingot Iron

Ashland,Ky.(8) A10 ..... 3.975
Warren,O. R2 ..... 4.325

STRIP, Cold-Rolled Ingot Iron

Warren,O. R2 ..... 5.70

TIGHT COOPERAGE HOOP

Atlanta,Ill. 4.45
Riverdale,Ill. A1 ..... 4.30
Sharon,Pa. S3 ..... 4.55
Youngstown U5 ..... 4.15

SHEETS, Electro Galvanized

Dover,O. G6 ..... 5.50
Warren,O. T5 ..... 5.70
Weirton,W.Va. W6 ..... 5.50
Youngstown C8 ..... 5.70

STRIP, Electro Galvanized

Bridgeprt,Conn.(10)S15 12.15
Carnegie,Pa. S18 ..... 12.60
Cleveland A7 ..... 11.40
Dover,O. G6 ..... 11.50
Fontana,Calif. K1 ..... 13.05
Harrison,N.J. C18 ..... 12.00
Midland,Pa. C18 ..... 12.00
NewBritn.,Conn.(10)S15 12.15
Pawtucket,R.I.(11) N8 12.15
Pawtucket,R.I.(12) N8 12.45
Sharon,Pa. S3 ..... 12.00
Worcester,Mass. A7 ..... 11.70
Youngstown, C8 ..... 12.00

STRIP, Cold-Rolled Ingot Iron

Ashland,Ky.(8) A10 ..... 3.975
Warren,O. R2 ..... 4.325

STRIP, Cold-Rolled Ingot Iron

Warren,O. R2 ..... 5.70

TIGHT COOPERAGE HOOP

Atlanta,Ill. 4.45
Riverdale,Ill. A1 ..... 4.30
Sharon,Pa. S3 ..... 4.55
Youngstown U5 ..... 4.15

SHEETS, SILICON, H.R. or C.R (22 Ga.) COILS (Cut lengths 1/2c lower)

	Field	Armature	Electric	Motor	Dynamo
BeechBottom,W.Va.(cut lengths)			7.85	9.10	9.90
Brackenridge,Pa. A1			8.35	9.60	10.40
GraniteCity,Ill. G4 (cut lengths)			8.50	9.80	
IndianaHarbor,Ind. I-2	7.50	7.85	(30)	(41)	
Mansfield,O. E6 (cut lengths)	7.20	7.55	7.85	9.10	9.90
Niles,O. N12 (cut lengths)	7.90	7.55	7.85		
Vandergrift,Pa. U5		7.85	8.35	9.60	10.40
Warren,O. R2	7.55	7.85	8.35	9.60	10.40
Zanesville,O. A10		7.85	8.35	9.60	10.40

SHEETS, SILICON (22 Ga. Base) COILS (Cut Length 1/2c lower)

Transformer Grade	72	65	58	52
BeechBottom,W.Va.(cut lengths)	10.45	11.00	11.70	12.50
Brackenridge,Pa. A1	10.95			
Vandergrift,Pa. U5	10.95	11.50	12.20	13.00
Warren,O. R2	10.95			
Zanesville,O. A10	10.95	11.50	12.20	13.00

H.R. or C.R. COILS AND CUT LENGTHS, SILICON (22 Ga.)

	T-100	T-90	T-80	T-73
Butler,Pa.[1] A10 (C.R.)			15.35	15.85
Vandergrift,Pa. U5	13.50	14.35	15.35	15.85

[1] Plus 1.575 per 100 lb.

Key to Producers

A1 Acme Steel Co.
A3 Alan Wood Steel Co.
A4 Allegheny Ludlum Steel
A7 American Steel & Wire
A8 Anchor Drawn Steel Co.
A9 Angell Nail & Chaplet
A10 Armco Steel Corp.
A11 Atlantic Steel Co.
A13 American Cladmetals Co.
B1 Babcock & Wilcox Co.
B2 Bethlehem Steel Co.
B3 Beth. Pac. Coast Steel
B4 Blair Strip Steel Co.
B5 Bliss & Laughlin Inc.
B6 Bolardi Steel Corp.
B8 Braeburn Alloy Steel
B11 Buffalo Bolt Co.
B12 Buffalo Steel Div., H. K. Porter Co.
B14 A. M. Byers Co.
C1 Calstrip Steel Corp.
C2 Calumet Steel Div. Borg-Warner Corp.
C4 Carpenter Steel Co.
C5 Central Iron & Steel Div. Barium Steel Corp.
C7 Cleve. Cold Rolling Mills
C8 Cold Metal Products Co.
C9 Colonial Steel Co.
C10 Colorado Fuel & Iron
C11 Columbia-Geneva Steel
C12 Columbia Steel & Shaft.
C13 Columbia Tool Steel Co.
C14 Compressed Steel Shaft
C16 Continental Steel Corp.
C17 Copperweld Steel Co.
C18 Crucible Steel Co.
C19 Cumberland Steel Co.
C20 Cuyahoga Steel & Wire
C22 Claymont Steel Corp.
D2 Detroit Steel Corp.
D3 Detroit Tube & Steel
D4 Disston & Sons, Henry
D6 Driver Harris Co.
D7 Dickson Weatherproof Nail Co.
E1 Eastern Gas&Fuel Assoc.
E2 Eastern Stainless Steel
E4 Electro Metallurgical Co.
E5 Elliott Bros. Steel Co.
E6 Empire Steel Corp.
F2 Firth Sterling Inc.
F3 Fitzsimons Steel Co.
F4 Follansbee Steel Corp.
F5 Franklin Steel Div. Borg-Warner Corp.
F6 Fretz-Moon Tube Co.
F7 Ft. Howard Steel & Wire
G2 Globe Iron Co.
G3 Globe Steel Tubes Co.
G4 Granite City Steel Co.
G5 Great Lakes Steel Corp.
G6 Greer Steel Co.
H1 Hanna Furnace Corp.
I-1 Igoe Bros. Inc.
I-2 Inland Steel Co.
I-3 Interlake Iron Corp.
I-4 Ingersoll Steel Div. Borg-Warner Corp.
I-7 Indiana Steel & Wire Co.
J1 Jackson Iron & Steel Co.
J3 Jessop Steel Co.
J4 Johnson Steel & Wire Co.
J5 Jones & Laughlin Steel
J6 Josiyn Mfg. & Supply
J7 Judson Steel Corp.
J8 Jersey Shore Steel Co.
K1 Kaiser Steel Corp.
K2 Keokuk Electro Metals
K3 Keystone Drawn Steel
K4 Keystone Steel & Wire
L1 Laclede Steel Co.
L2 LaSalle Steel Co.
L3 Latrobe Steel Co.
L5 Lockhart Iron & Steel
L6 Lone Star Steel Co.
L7 Lukens Steel Co.

WIRE, Merchant Quality

(6 to 8 gage)	An'ld.	Galv.
AlabamaCity,Ala.	R2	6.075 6.325
Aliquippa,Pa.	J5	6.075 6.525‡
Atlanta,Ga.	A11	6.325 6.675
Bartonville,Ill.	K4	6.075 6.40
Buffalo,N.Y.	W12	5.225 ....
Cleveland,O.	A7	6.075 6.225
CrawfordsvilleInd.	M8	6.175 6.50
Donora,Pa.	A7	6.075 6.225
Duluth,Minn.	A7	6.075 6.225
Fairfield,Ala.	T2	6.075 6.225
Houston,Tex.	S5	6.475 6.625
Johnstown,Pa.	B2	6.075 6.45‡
Joliet,Ill.	A7	6.075 6.225
Kansas City,Mo.	S6	6.675 6.825
Kokomo,Ind.	C16	6.175 6.425
LosAngeles,Cal.	B3	7.025 ....
Minnequa,Colo.	C10	6.325 6.70‡
Monessen,Pa.	P7	6.075 6.45
Palmer,Mass.	W12	5.525 ....
Pitts.,Calif.	C11	7.025 7.175
Pittsburgh,Calif.	P12	6.475 ....
Rankin,Pa.	A7	6.075 6.225
So.Chicago,Ill.	R2	6.075 6.325
So.S.Fran.,Calif.	C10	7.025 7.40‡
SparrowsPt.,Md.	B2	6.175 6.55
Sterling,Ill.	N15	6.075 6.40
Struthers,O.	Y1	6.075 6.475
Torrance,Cal.	C11	7.025 ....
Worcester,Mass.	A7	6.375 6.525

(Based on 14c zinc; $14.50c zinc; $17.5c zinc.

WIRE (16 gage)	Stone	Anl'd. Stone	Galv.
(Add 4.7 on base and extras)			
Aliquippa,Pa.	J5	10.15 12.15	
BartonvilleIll.	K4	10.25 12.00‡	
Cleveland,O.	A7	10.25 11.55	
Crawfordsville,Ind.	M8	10.75 12.35	
Fostoria,O.	S1	10.40 12.00	
Johnstown,Pa.	B2	10.75 12.55	
Kokomo,Ind.	C16	10.625 12.225	
Minnequa,Colo.	C10	10.40 12.425‡	
Palmer,Mass.	W12	10.25 12.15	
Pitts.,Cal.	C11	10.60 11.90	
SparrowsPt.,Md.	B2	10.84 12.685	
Sterling,Ill.	N15	10.75‡ 12.20	
Waukegan,Ill.	A7	10.25 11.55	
Worcester,Mass.	A7	11.85	

(Based on 14c zinc; $14.50c zinc. Includes 4.7% increase.

WIRE, Manufacturers Bright, Low Carbon

AlabamaCity,Ala.	R2	5.225
Aliquippa,Pa.	J5 (42)	4.85
Atlanta,Ga.	A11	5.475
Alton,Ill.	L1	5.45
Bartonville,Ill.	K4	5.325
Buffalo,N.Y.	W12	5.225
Chicago,Ill.	W13	5.475
Cleveland,O.	A7, C20	5.225
CrawfordsvilleInd.	M8	5.325
Donora,Pa.	A7	5.225
Duluth,Minn.	A7	5.225
Fairfield,Ala.	T2	5.225
Fostoria,O.	(24) S1	5.725
Houston,Tex.	S5	5.625
Johnstown,Pa.	B2	5.225
Joliet,Ill.	A7	5.225
Kansas City,Mo.	S6	5.825
Kokomo,Ind.	C16	5.325
LosAngeles,Cal.	B3	6.175
Minnequa,Colo.	C10	5.475
Monessen,Pa.	P7	5.175
Newark,N.J.	6-8 ga. I-1	5.88
So.Tonawanda,N.Y.	B11	5.225
Palmer,Mass.	W12	5.525
Pittsburg,Calif.	C11	6.175
Portsmouth,O.	P12	5.625
Rankin,Pa.	A7	5.225
So.Chicago,Ill.	R2	5.225
So.SanFrancisco,Calif.	C10	6.175
SparrowsPoint,Md.	B2	5.325
Sterling,Ill.	N15	5.225
Struthers,O.	Y1	5.225
Torrance,Calif.	C11	6.175
Waukegan,Ill.	A7	5.225
Worcester,Mass.	A7	5.525

WIRE, Cold-Rolled Flat

Anderson,Ind.	G6	6.20
Buffalo,N.Y.	W12 (43)	6.35
Cleveland,O.	A7 (43)	6.35
Crawfordsville,Ind.	M8 (43)	5.85
Dover,O.	G6	6.20
Fostoria,O.	S1 (43)	6.00
Kokomo,Ind.	C16 (43)	5.70
FranklinPark,Ill.	T6 (43)	6.20
Massillon,O.	R8 (43)	5.85
Monessen,Pa.	P16 (43)	6.35
Monessen,Pa.	P7 (43)	6.10
Pawtucket,R.I.	(12) N8 (43)	6.85
Trenton,N.J.	R5 (43)	6.15
Worcester,Mass.	A7 (43)	6.15
Worcester,Mass.	T6 (43)	6.50
Worcester,Mass.	W12 (43)	6.65

WIRE, Galv'd ACSR for Cores

Bartonville,Ill.	K4	8.90
Monessen,Pa.	P16 (43)	8.90
Muncie,Ind.	I-7 (43)	8.70
Roebling,N.J.	R5 (43)	8.80
SparrowsPt.,Md.	B2 (43)	8.60
Johnstown,Pa.	B2 (43)	8.90

ROPE WIRE

Alton,Ill.	L1 (43)	9.15
Bartonville,Ill.	K4	8.95
Buffalo,N.Y.	W12 (43)	8.55
Fostoria,O.	S1 (43)	8.85
Johnstown,Pa.	B2 (43)	8.90
Monessen,Pa.	P16 (43)	8.90
Monessen,Pa.	P7 (43)	8.80
Muncie,Ind.	I-7 (43)	8.75
Palmer,Mass.	W12 (43)	8.85
Portsmouth,O.	P12 (43)	8.85
Roebling,N.J.	R5 (43)	8.85
SparrowsPt.	B2 (43)	8.65
Struthers,O.	Y1 (43)	8.85
Worcester,Mass.	T6 (43)	8.80

(X) Plow and Mild Plow add 0.2c for improved plow.

WIRE, MB Spring, High Carbon

Aliquippa,Pa.	J5 (43)	6.25
Alton,Ill.	L1	6.50
Bartonville,Ill.	K4	6.60
Buffalo,N.Y.	W12 (43)	6.25
Cleveland,O.	A7 (43)	6.25
Donora,Pa.	A7 (43)	6.25
Duluth,Minn.	A7 (43)	6.25
Fostoria,O.	S1 (43)	6.25
Johnstown,Pa.	B2 (43)	6.25
Millsboro,Pa.	N6 (43)	8.05
Minnequa,Colo.	C10 (43)	6.50
Monessen,Pa.	P7 (43)	6.25
Monessen,Pa.	P16	6.75
Muncie,Ind.	I-7 (43)	6.45
Palmer,Mass.	W12 (43)	6.35
Pittsburg,Calif.	C11 (43)	7.20
Roebling,N.J.	R5 (43)	6.50
Portsmouth,O.	P12 (43)	6.25
So.Chicago,Ill.	R2 (43)	6.25
So.SanFran.,Calif.	C10 (43)	7.20
SparrowsPt.,Md.	B2 (43)	6.25
Struthers,O.	Y1 (43)	6.25
Trenton,N.J.	A7 (43)	6.35
Waukegan,Ill.	A7 (43)	6.25
Worcester,Mass.	A7, T6 (43)	6.60
WorcesterMass.	W12 (43)	6.55
Worcester,Mass.	J4 (43)	6.75

WIRE, Upholstery Spring

Aliquippa,Pa.	J5	6.275
Alton,Ill.	L1	6.50
Buffalo,N.Y.	W12	6.275
Cleveland,O.	A7	6.275
Donora,Pa.	A7	6.275
Duluth,Minn.	A7	6.275
Johnstown,Pa.	B2	6.275
LosAngeles,Cal.	B3	7.225
Minnequa,Colo.	C10	6.650
Monessen,Pa.	P7	6.275
Monessen,Pa.	P16 (42)	6.40
NewHaven,Conn.	A7	6.575
Palmer,Mass.	W12	6.525
Pittsburg,Calif.	C11	7.225
Portsmouth,O.	P12	6.275
Roebling,N.J.	R5	6.525
So.Chicago,Ill.	R2	6.275
So.SanFrancisco,Calif.	C10	7.225
SparrowsPoint,Md.	B2	6.375
Torrance,Calif.	C11	7.225
Trenton,N.J.	A7	6.575
Waukegan,Ill.	A7	6.275
Worcester,Mass.	A7	6.575

WIRE, Fine & Weaving (8 Coils)

Alton,Ill.	L1 (43)	9.20
Bartonville,Ill.	K4	9.42
Buffalo,N.Y.	W12 (43)	8.90
Chicago,Ill.	W13	9.32
Cleveland,O.	A7 (43)	8.90
Crawfordsville,Ind.	M8 (43)	8.90
Fostoria,O.	S1 (43)	8.90
Johnstown,Pa.	B2 (43)	8.90
Kokomo,Ind.	C16 (43)	8.90
Monessen,Pa.	P16 (43)	8.90
Muncie,Ind.	I-7 (43)	9.10
Palmer,Mass.	W12 (43)	9.20
Roebling,N.J.	R5 (43)	9.20
Waukegan,Ill.	A7 (43)	8.90
Worcester,Mass.	A7, T6 (43)	9.20

WIRE, Tire Bead

Bartonville,Ill.	K4	11.51
Monessen,Pa.	P16 (43)	11.40
Roebling,N.J.	R5 (43)	11.55

WOVEN FENCE,9-15½ Ga. Coil

AlabamaCity,Ala.	R2	135
Ala.City,Ala.	17-19ga.	R2 222
Aliquippa,Pa.	9-14½ga.	J5 139‡
Atlanta,Ga.	A11	140
Bartonville,Ill.	(19) K4	137
Crawfordsville,Ind.	M8	139
Donora,Pa.	A7	133
Duluth,Minn.	A7	133
Fairfield,Ala.	T2	133
Houston,Tex.	S5	141
Johnstown,Pa.	B2	138
Johnstown,17ga.	6" B2	229
Joliet,Ill.	A7	133
Kansas City,Mo.	S6	145
Kokomo,Ind.	C16	140
Minnequa,Colo.	C10	146*
Monessen,Pa.	P7	138
Pittsburg,Calif.	C11	166
Rankin,Pa.	A7	133
So.Chicago,Ill.	R2	133
Sterling,Ill.	(1) N15	137

(Based on 14c zinc; 17.5c zinc

FENCE POSTS Col.

ChicagoHts.,Ill.	C2
Duluth,Minn.	A7
Franklin,Pa.	F6
Huntington,W.Va.	W7
Johnstown,Pa.	B2
Marion,O.	P11
Minnequa,Colo.	C10
Moline,Ill.	R2
So.Chicago,Ill.	R2
Tonawanda,N.Y.	B12
Williamsport,Pa.	S19

WIRE, Barbed Col.

AlabamaCity,Ala.	R2
AliquippaPa.	J5
Atlanta,Ga.	A11
Bartonville,Ill.	(19) K4
Crawfordsville,Ind.	M8
Donora,Pa.	A7
Duluth,Minn.	A7
Fairfield,Ala.	T2
HoustonTex.	S5
Johnstown,Pa.	B2
Joliet,Ill.	A7
KansasCity,Mo.	S6
Kokomo,Ind.	C16
Minnequa,Colo.	C10
Pittsburg,Calif.	C11
Rankin,Pa.	A7
So.Chicago,Ill.	R2
So.SanFran.,Calif.	C10
SparrowsPoint,Md.	B2
Sterling,Ill.	(1) N15

(Based on 14c zinc; $17.5c zinc.

BALE TIES, Single Loop Col.

AlabamaCity,Ala.	R2
Atlanta,Ga.	A11
Bartonville,Ill.	(19) K4
Crawfordsville,Ind.	M8
Donora,Pa.	A7
Duluth,Minn.	A7
Fairfield,Ala.	T2
Joliet,Ill.	A7
KansasCity,Mo.	S6
Kokomo,Ind.	C16
Minnequa,Colo.	C10
Pittsburg,Calif.	C11
So.Chicago,Ill.	R2
So.SanFran.,Calif.	C10
SparrowsPoint,Md.	B2
Sterling,Ill.	(1) N15

TRACK BOLTS (20) Treated

KansasCity,Mo.	S6
Lebanon,Pa.	(31) B2
Minnequa,Colo.	C10
Pittsburgh,Cal.	P14

AXLES

Ind Harbor,Ind.	S13
Johnstown,Pa.	B2

NAILS, Stock

To dealers & mfrs. (7)	Col.
AlabamaCity,Ala.	R2
Aliquippa,Pa.	J5
Atlanta,Ga.	A11
Bartonville,Ill.	(19) K4
Chicago,Ill.	W13
Cleveland,O.	(14) A7
Crawfordsville,Ind.	M8
Donora,Pa.	A7
Duluth,Minn.	A7
Fairfield,Ala.	T2
Galveston,Tex.	D2
Houston,Tex.	S5
Johnstown,Pa.	B2
Joliet,Ill.	A7
Kansas City,Mo.	S6
Kokomo,Ind.	C16
Minnequa,Colo.	C10
Monessen,Pa.	P7
Pittsburg,Calif.	C11
Portsmouth,O.	P12
Rankin,Pa.	A7

Sc.Chicago,Ill.	R2
Sparrowspt,Md.	B2
Sterling,Ill.	(1) N15
Torrance,Calif.	C11
Worcester,Mass.	A7

STAPLES, Polished, Stock

To dealers & mfrs. (7)	Col.
AlabamaCity,Ala.	R2
Aliquippa,Pa.	J5
Atlanta,Ga.	A11
Bartonville,Ill.	(19) K4
Chicago,Ill.	W13
Crawfordsville,Ind.	M8
Donora,Pa.	A7
Duluth,Minn.	A7
Fairfield,Ala.	T2
Johnstown,Pa.	B2
Joliet,Ill.	A7
Kokomo,Ind.	C16
Minnequa,Colo.	C10
Monessen,Pa.	P7
Pittsburg,Calif.	C11
Portsmouth,O.	P12
Rankin,Pa.	A7
So.Chicago,Ill.	R2
Sparrowspt,Md.	B2
Sterling,Ill.	(1) N15
Torrance,Calif.	C11
Worcester,Mass.	A7

NAILS, Cut (100 lb keg)

To dealers (33)

Conshohocken,Pa.	A7
Wheeling,W.Va.	W10

TIE PLATES

Fairfield,Ala.	T2
Gary,Ind.	U5
Ind Harbor,Ind.	I-2
Lackawanna,N.Y.	B2
Minnequa,Colo.	C10
Pittsburg,Calif.	C11
Seattle,Wash.	B3
Steelton,Pa.	B2
Torrance,Calif.	C11

Per net ton

JOINT BARS

Bessemer,Pa.	U5
Fairfield,Ala.	T2
Ind Harbor,Ind.	I-2
Joliet,Ill.	U5
Lackawanna,N.Y.	B2
Minnequa,Colo.	C10
Steelton,Pa.	B2

STANDARD TRACK SPIKES

Ind Harbor,Ind.	I-2, Y1
KansasCity,Mo.	S6
Lebanon,Pa.	B2
Minnequa,Colo.	C10
Pittsburgh,Pa.	J5
Seattle,Wash.	B3
Steelton,Pa.	B2
Struthers,O.	Y1
Youngstown,O.	R2

RAILS	Std. No. 1	Std. No. 2	Std. Tee Rails All No. 2	Std. Tee Rails 60 lb Under
Bessemer,Pa.	U5	3.775	3.675	3.725	4.25
Fnaley,Ala.	T2	3.775	3.675		4.25
Fairfield,Ala.	T2				4.25
Gary,Ind.	U5	3.775	3.675	3.725	
Huntington,W.Va.	W7				5.25
Indiana Harbor,Ind.	I-2	3.775	3.675	3.725	
Johnstown,Pa.	B2				(16)4.25
Lackawanna,N.Y.	B2	3.775	3.675		4.25
Minnequa,Colo.	C10	$75.50*	$73.50*		4.75
Steelton,Pa.	B2	3.775	3.675		
Williamsport,Pa.	S19				5.00

Per net ton

TOOL STEEL

(Prices subject to 4.7% increase)

Grade	$ per lb
Regular Carbon	0.230
Extra Carbon	0.270
Special Carbon	0.325
Oil Hardening	0.340
3% Cr Hot Work	0.530
Hi Carbon Cr	0.650

Grade by Analysis

W	Cr	V	Co	Mo
18	4	1		1.00
18	4	2	1.65	1.66
20	2	2	12	2.5	3.25
18	4	2	5	2.50
18	2	2	1	4.75	2.25
18	4	2	9	2.45	2.45
18	4	1		1.60	
¾	3.75	0.6		2.05
W	Cr	V	Mo	
6	4	1.50		0.50	0.85
6	4	2	6	1	1.00
1.5	4	1	8.5		0.5

Tool steel producers include A4 As B2 Bs C1 C6 C12 C15 D4 E2 J3 L3 M14 S8 U4 V2 and V3.

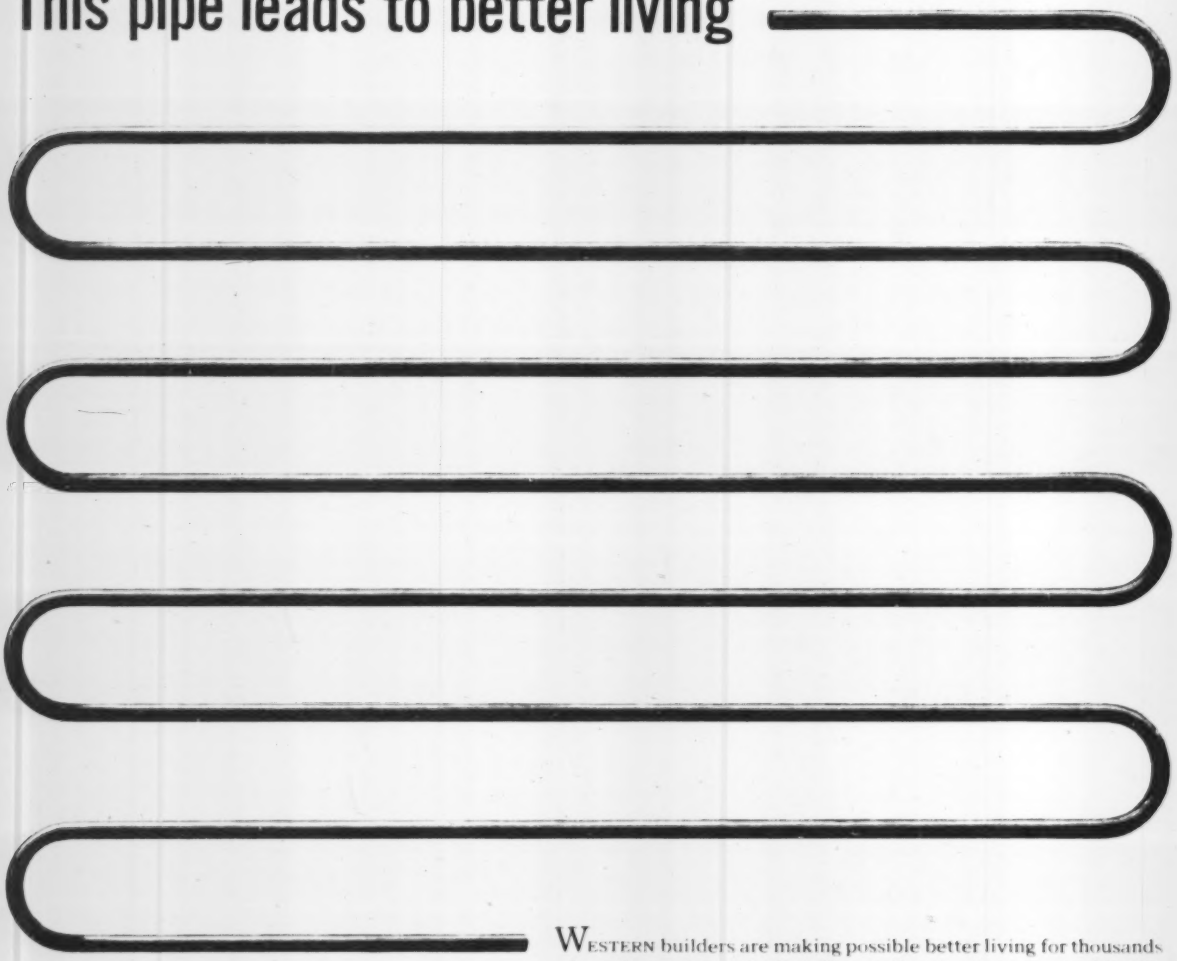
FOOTNOTES

(1) Grade base
(2) Angles, flats, hand
(3) Merchant
(4) Reinforcing
(5) Chicago or Illinois base
(12) To jobbers, 5 coils base
(16) 16 gage and heavier
(17) 6 dr. and heavier
(19) Pittsburgh base
(21) Cleveland & Pitts. base
(22) Worcester, Mass. base
(23) Mill or to jobbers & dealers
(24) Chicago & Pitts. base
(25) 0.25c off for untreated
(27) New Haven, Conn. base
(32) Ind. Ste. San Francisco Bay area
(33) 20c a keg, 40" walls
(34) Bethlehem, Pa. base
(35) Bolts, nuts, rivets, spikes, tie plates, screw spikes, track bolts, tie rods, turnbuckles
(36) Bar mill basis
(37) Reinforcing mill basis
(38) Special mill
(39) Not annealed
(40) Bal. on square edge
(41) To others, deduct 20c
(42) 2.50c for cut lengths
(43) 12" and narrower
(44) 36" and narrower
(45) 24" and narrower
(46) 14 gage & lighter
(47) 16 gage & lighter
(48) 18" and narrower
(49) Lighter than 0.25"
(50) 0.25" and heavier
(51) 0.24c base
(52) Plus $1.50 per 100 lb.
(53) Plus 4.7% on base and extras
(54) Plus $5.00 per ton
(55) Plus $10 per ton
(56) Plus $5 per ton

Key to Producers

M1 McLouth Steel Corp.
M4 Mahoning Valley Steel
M6 Medart Co.
M9 Mercer Tube & Mfg. Co.
M8 Mid-States Steel & Wire
M12 Moltrup Steel Products
M13 Monarch Steel Co.
N2 National Supply Co.
N3 National Tube Div.
N5 Nelson Steel & Wire Co.
N6 New Eng.-High Carb Wire
N8 Newman-Crosby Steel
N12 Niles Rolling Mill Div.
N14 Northwest Steel Roll Mills
N15 Northwestern S&W Co.
N16 New Delphos Mfg. Co.
O1 Oliver Iron & Steel Corp.
O4 Oregon Steel Mills
P1 Pacific States Steel Corp.
P2 Pacific Tube Co.
P4 Phoenix Iron & Steel Co.
P5 Pilgrim Drawn Steel
P6 Pittsburgh Coke & Chem.
P7 Pittsburgh Steel Co.
P8 Pittsburgh Tube Co.
P11 Polish Steel Co.
P12 Portsmouth Division, Detroit Steel Corp.
P13 Precision Drawn Steel
P14 Pitts. Screw & Bolt Co.
P15 Pittsburgh Metallurgical
P16 Pratt Steel & Wire Div. Amer. Chain & Cable
P17 Plymouth Steel Co.
R1 Reeves Steel & Mfg. Co.
R2 Republic Steel Corp.
R3 Rhode Island Steel Corp.
R5 Roebling's Sons, John A.
R6 Rome Strip Steel Co.
R7 Rotary Electric Steel Co.
R8 Relance Div., Eaton Mfg.
S1 Seneca Wire & Mfg. Co.
S3 Sharon Steel Corp.
S4 Sheffield Steel Corp.
S6 Shenango Furnace Co.
S7 Simmons Co.
S8 Sivyer Steel & Steel Co.
S9 Sou. Shefford S&I, Ltd.
S13 Standard Forgings Corp.
S14 Standard Tube Co.
S15 Stanley Works
S16 Struthers Iron & Steel
S17 Superior Drawn Steel Co.
S18 Superior Steel Corp.
S19 Sweet's Steel Co.
S20 Southern States Steel
S24 Seidelhuber Steel
T2 Tenn. Coal & Iron Div.
T3 Tenn. Prod. & Chem.
T4 Texas Steel Co.
T6 Thomas Strip Division, Pittsburgh Steel Co.
T6 Thompson Wire Co.
T7 Timken Roller Bearing
T9 Tonawanda Iron Div. Am. Rad. & Stan. San.
U4 Universal Cyclops Steel
U5 United States Steel Corp.
V2 Vanadium Alloys Steel
V3 Vulcan Crucible Steel Co.
W1 Wallace Barnes Co.
W2 Wallingford Steel Co.
W3 Washburn Wire Co.
W4 Washington Steel Corp.
W6 Weirton Steel Co.
W7 W. Va. Steel & Mfg. Co.
W8 West Auto Mach. Screw
W9 Wheatland Tube Co.
W10 Wheeling Steel Corp.
W12 Wickwire Spencer Steel Div., Colo. Fuel & Iron
W13 Wilson Steel & Wire Co.
W14 Wisconsin Steel Div. International Harvester
W15 Woodward Iron Co.
W18 Wyckoff Steel Co.
Y1 Youngstown Sheet & Tube

This pipe leads to better living



WESTERN builders are making possible better living for thousands of new home owners by installing radiant heating—much of it with Kaiser Steel pipe.

Radiant heating gives even, healthful temperatures in every room. It is exceptionally clean and safe. When Kaiser Steel pipe is used the grid system is so durable that it far outlasts the normal life of the house.

Steel pipe has become essential in nearly all modern construction—for plumbing, heating, ventilating, structural supports—and even for TV antennae poles.

The diversified line of steel pipe and other steel products produced by Kaiser Steel means that the great western building industry has a nearby, dependable source to help meet its many needs.

It's good business to do business with

Kaiser Steel

built to serve the West

PROMPT, DEPENDABLE DELIVERY AT COMPETITIVE PRICES • plates • continuous weld pipe • electric weld pipe • tin plate • hot rolled strip • hot rolled sheet alloy bars • carbon bars • structural shapes • cold rolled strip • special bar sections • semi-finished steels • pig iron • coke oven by-products For details and specifications, write: **KAISER STEEL CORPORATION, LOS ANGELES, OAKLAND, SEATTLE, PORTLAND, HOUSTON, TULSA, NEW YORK**

BUTTWELD STANDARD PIPE, T & C Carload discounts from list, %

Size—Inches	⅛		¼		⅜		½		¾		1		1¼		1½		2		2½		3	
List Per Ft	8.5c		11.5c		17c		23c		27.5c		37c		58.5c		76.5c							
Pounds Per Ft	0.85		1.13		1.68		2.28		2.73		3.68		5.82		7.62							
	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv
Aliquippa, Pa. J5 (‡)	32.5	15.25	35.5	18.25	38	20.75	38.5	20.5	39	21	39.5	21.5	40	21.25	40	21.25						
Aliq. Ill. L1 (‡)	29.5	10.5	32.5	14.5	35	18	35.5	18.5	36	19.5	36.5	20	37	20.5	37	20.5						
Benwood, W. Va. W10	32.5	13.25	35.5	17.25	38	20.75	38.5	20.5	39	21.5	39.5	22	40	21.75	40	21.75						
Etna, Pa. N2 (‡)	32.5	13.25	35.5	17.25	38	20.75	38.5	20.5	39	22.25	39.5	22	40	21.75	40	21.75						
Fontana Calif. K1 (‡)	19.5	0.25	22.5	4.25	25	7.75	25.5	7.5	26	8.5	26.5	9	27	8.75	27	8.75						
Ind. Harbor, Ind. Y1 (‡)	31.5	14.25	34.5	18.25	37	21.75	37.5	21	38	22	38.5	22.25	39	21.75	39	21.75						
Lorain, O. N3 (*)	32.5	22.25	35.5	26.25	38	29.75	38.5	27.25	39	28.25	39.5	28.75	40	26.25	40	26.25						
Sharon, Pa. M6	32.6	14.25	35.5	18.25	38	21.25	38.5	20.50	39	21.00	39.5	21.50	40	20.75	40	20.75						
Sparrows Pt., Md. B2	30.5	11.25	33.5	15.25	36	18.75	36.5	18.5	37	19.5	37.5	20	38	19.75	38	19.75						
Youngstown Y1 (‡)	32.5	15.25	35.5	19.25	38	22.75	38.5	21.25	39	22.25	39.5	22.75	40	22.25	40	22.25						
Wheatland, Pa. W9	32.5	13.25	35.5	16.25	38	18.75	38.5	22.00	39	23.00	39.5	23.50	40	22.75	40	22.75						
Youngstown R2 (‡)	32.5	15.25	35.5	19.25	38	22.75	38.5	22	39	23	39.5	23.5	40	22.75	40	22.75						

SEAMLESS STANDARD PIPE, T & C Carload discounts from list, %

Size—Inches	2		2½		3		3½		4		5		6	
List Per Ft	37c		58.5c		76.5c		92c		$1.09		$1.48		$1.92	
Pounds Per Ft	3.68		5.82		7.62		9.20		10.89		14.81		19.18	
	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv
Aliquippa, Pa. J5(‡)	24	6	27	8.25	27	8.25	29	10.25	29	10.25	33.75	15	33.75	15
Ambridge, Pa. N2	24	6	27	8.25	27	8.25	29	10.25	29	10.25	33.75	15	33.75	15
Lorain, O. N3 (*)	24	12.75	27	12.75	27	12.75	29	14.75	29	14.75	33.75	19.5	33.75	19.5
Youngstown Y1 (‡)	24	7.50	27	9.25	27	9.25	29	11.25	29	11.25	33.75	16	33.75	16

ELECTRIC WELD STANDARD PIPE, T & C

Youngstown R2 (‡)	24	7.5	27	9.25	27	9.25	29	11.25	29	11.25	33.75	16	33.75	16

BUTTWELD STANDARD PIPE, T & C Carload discounts from list, %

Size—Inches	⅛		¼		⅜		3½		4	
List Per Ft	5.5c		6c		6c		92c		$1.09	
Pounds Per Ft	0.24		0.42		0.57		9.20		10.89	
	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv
Benwood, W. Va. W10	29.5	+0.25	23.25	+3.5	17.75	+7.75	33	14.25	33	14.25
Butler, Pa. F6 (‡)	30.5	1.25	25	+1.75	20	+5.5	..	..	..	..
Etna, Pa. N2 (‡)	30.5	1.25	25	+1.75	20	+5.5	33	14.25	33	14.25
Sharon, Pa. M6 (‡)	29.5	+0.25	23	+4.25	18	+8.25	..	..	..	..
Sparrows Pt., Md. B2	28.5	+0.75	23	+3.75	18	+7.50	..	..	..	..
Youngstown R2 (‡)	..	..	..	..	..	..	33	15.25	33	15.25
Wheatland, Pa. W9	28.5	+0.75	23	+3.75	18	+7.50	..	..	..	..

Galvanized pipe discounts based on zinc price of: (†), 14c; (‡), 12.50c; ($), 14.50c; (*), 9c; with discounts adjusted depending on price of zinc at time of shipment.

CLAD STEELS

(Cents per pound; add 4.7% to base price and extras)

Cladding Stainless	Plates: Carbon Base 10%	Plates: Carbon Base 20%	Sheets: Carbon Base 10%	Sheets: Carbon Base 20%	Sheets: Copper Base Both Sides
302	..	..	19.75-26	24-27.50	77.00
304	25.00	26.50	24.50-27	27.50-27.77	77.00
309	30.50	35.00	..	..	..
310	36.50	41.00	..	..	144.00
316	29.50	34.00	26.00	33.92-36.50	..
317	34.50	39.00	..	..	..
318	33.50	38.00	..	..	..
321	26.50	31.00-32.00	23.00	33.00	111.00
347	27.50	32.00	24.00	33.50-33.83	130.00
405	21.25	27.75	..	..	..
410	20.75	27.25	..	..	..
Nickel	33.55	45.15	..	..	..
Inconel	41.23	54.18	..	..	165.00
Monel	34.93	46.28	..	..	..
Copper*	..	..	..	44.00	..

	Strip: Carbon Base: Cold-Rolled 10%	Strip: Carbon Base: Cold-Rolled Both Sides	Strip: Carbon Base: Hot-Rolled 10%	Strip: Carbon Base: Hot-Rolled Both Sides
Nickel	41.00	44.00	..	..
Copper*	23.70	26.65	20.20	26.10

* DeOxidized. Production points for carbon base products: Stainless plates, sheets, Conshohocken, Pa. A3 and New Castle, Ind. I-4; stainless-clad plates, Claymont, Del. (22), Coatesville, Pa. L7 and Washington, Pa. J3; nickel, inconel, monel-clad plates, Coatesville L7; nickel, copper-clad strip, Carnegie, Pa. S18. Production point for copper-base sheets is Carnegie, Pa. A13.

BOLTS, NUTS

CARRIAGE, MACHINE BOLTS

(F.o.b. midwestern plants; per cent off list for less than case lots to consumers)

6 in. and shorter:

½-in. & smaller diam.	15
⅝-in. & ¾-in.	18.5
⅞-in. and larger	17.5
Longer than 6 in.:	
All diams.	14
Lag bolts, all diams.:	
6 in. and shorter	23
over 6 in. long	21
Ribbed Necked Carriage	18.5
Blank	34
Plow	34
Step, Elevator, Tap and Sleigh Shoe	21
Tire Bolts	21
Boiler & Fitting-Up Bolts	31

NUTS

H.P. & C.P. Square:	Reg. Hvy.
½-in. & smaller	15 15
⅝-in. & ¾-in.	12 6.5
⅞-in.-1⅛-in.	9 1
1⅛-in. & larger	7.5 1
H.P. Hex.:	
½-in. & smaller	26 22
⅝-in. & ¾-in.	16.5 6.5
⅞-in.-1½-in.	12 2
1⅝-in. & larger	8.5 2
C.P.Hex.:	
½-in. & smaller	26 22
⅝-in. & ¾-in.	23 17.5
⅞-in. & 1⅛-in.	19.5 12
1⅛-in. & larger	12 6.5

SEMIFINISHED NUTS

American Standard

(Per cent off list for less than case or keg quantities)

	Reg.	Hvy.
½-in. & smaller	35	28.5
⅝-in. & ¾-in.	29.5	22
⅞-in.-1½-in.	24	15
1⅝-in. & larger	13	8.5
		Light
⅛-in. & smaller		35
½-in. to ⅝-in.		28.5
¾-in. to 1½-in.		26

SQUARE HEAD SET SCREWS

(Packaged; per cent off list)

1 in. diam x 6 in. and shorter	38
1 in. and smaller diam. x over 6 in.	26

HEADLESS SET SCREWS

(Packaged; per cent off list)

No. 10 and smaller	35
¼-in. diam. & larger	16
N.F. thread, all diams.	10

STEEL STOVE BOLTS

(F.o.b. plant, per cent off list in packages)

Plain finish	48 & 10
Plated finishes	31 & 10

HEXAGON CAP SCREWS

(1020 steel; packaged; per cent off list)

6 in. or shorter:	
⅝-in. & smaller	42
¾-in. through 1 in.	34
Longer than 6 in.:	
⅝-in. and smaller	26
¾-in. through 1 in.	4

METALLURGICAL COKE

Price net ton

BEEHIVE OVENS

Connellsvil.fur	$14.50-15.00
Connellsvil.fdy.	16.50-17.50
New River foundry	20.80
Wise county, foundry	15.95
Wise county, furnace	15.20

OVEN FOUNDRY COKE

Kearney, N. J. ovens	$24.00
Everett, Mass., ovens	
New England, del.	*26.05
Chicago ovens	24.50
Chicago, del.	26.00
Terre Haute, ovens	24.05
Milwaukee, ovens	25.25
Indianapolis, ovens	24.25
Chicago, del.	28.12
Cincinnati, del.	25.85
Painesville, O., ovens	25.50
Cleveland, del.	27.43
Erie, Pa., ovens	25.00
Birmingham, ovens	21.65
Cincinnati, del.	26.58
LoneStar,Tex., ovens	18.50
Philadelphia, ovens	23.95
Swedeland, Pa., ovens	23.85
St. Louis, ovens	
St. Louis, del.	26.00
Portsmouth, O. ovens	24.00
Cincinnati, del.	26.62
Detroit, ovens	25.50
Detroit, del.	26.50
Buffalo, del	28.08
Flint, del.	28.23
Pontiac, del.	27.66
Saginaw, del	28.58

*Or within $4.55 freight zone from works.

NOTE: Current prices on boiler tubes, coal chemicals, fluorspar, electrodes and refractories appeared on page 125, Jan. 19 issue.

STAINLESS STEEL

(Add 4.7% on base price and extras)

Type	Sheets	C.R. Strip	Bars Wire Structurals
301	41.00	34.00	31.25
302	41.25	36.75	31.50
303	43.25	40.25	34.00
304	43.25	38.75	33.00
309	56.00	55.00	44.75
316	57.00	59.00	49.25
321	49.25	48.25	37.00
347	53.75	52.25	41.50
410	36.50	30.50	25.75
416	37.00	37.00	26.25
420	44.00	47.00	31.25
430	39.00	31.00	26.25
501	27.50	26.00	14.25
502	28.50	27.00	15.25

Balt., Types 301-347 and 430 sheets, except 303 and 309 F2.

Brackenridge, Pa. sheets A4 quotes slight variations on Types 301-347.

Bridgeville, Pa., bars, wire, sheets & strip U4.

Butler, Pa. sheets and strip except Types 303, 309, 416, 420, 501 & 502, A10.

Carnegie, Pa., sheets and strip except Types 303, 416, 501 & 502 S18.

Cleveland, strip A7.

Detroit, strip M1 quotes 34.00c on Type 301; 36.50c, 302, 38.50c, 304; 58.50c, 316, 52.00c, 347; 30.50c, 410; 31.00c, 430.

Dunkirk, N. Y., bars, wire A4 quotes slight variations on Types 301-347.

Duquesne, Pa., bars U5.

Fort Wayne, Ind., bars and wire, except Types 501 & 502 J6 quotes slight variations on Types 301-347.

Gary, Ind., sheets except Type 416 U5.

Harrison, N. J., strip and wire C18.

Massillon, O., all items, R2.

McKeesport, Pa., strip, Type 410; bars & wire, Types 410 through 430 and 31.25c on Type 302, 33.75c on 303, 32.75c on 304, 48.75c on 316, 36.75c on 321, 41.25c on 347 F2.

McKeesport, Pa., bars, sheets except Type 416 U5.

Middletown, O., sheets and strip except Types 303, 416, 420, 501 and 502 A10.

Midland, sheets & strip C18.

Munhall, Pa., bars U5.

Muncie, Ind., wire I-7 quotes types 302, 304, 430.

Pittsburgh, sheets C18.

Reading, Pa., strip except 34.25c on Type 301 and 56.00c on 309; bars, except 31.50c on Type 301 and 45.25c on 309 C4.

Sharon, Pa., strip except Types 303, 309, 416, 501, 502 and 34.25c on Type 301 S3.

So. Chicago, Ill., bars & structurals U5.

Syracuse, N. Y., bars, wire & structurals C18.

Titusville, Pa., bars U4.

Wallingford, Conn., strip W2 quotes 0.25c higher.

Washington, Pa., bars, sheets & strip, except 0.25c higher on Type 301 J3.

Washington, Pa., Types 301 through 347 sheets & strip except 303, 309; 316 sheets 62.00c, strip 64.00c W4.

Watervliet, N. Y., structurals & bars A4 quotes variations on Types 301-347.

Waukegan, bars & wire A7

West Leechburg, Pa., strip, A4 quotes slight variations on Types 301-347.

Youngstown, strip except Types 303, 309, 316, 416, 501 and 502 and 34.25c on Type 301 C8.

METAL POWDERS

(Per pound, f.o.b. shipping point in ton lots for minus 100 mesh, except as otherwise noted)

	Cents
Sponge iron:	
98.4% Fe, annealed	18.00
Unannealed	14.50
Swedish, c.i.f. N. Y., c.l. in bags	10.90
Electrolytic iron:	
Annealed, 99.5% Fe	42.50
Unannealed (99.4% Fe)	36.50
Unannealed (99.4% Fe) (minus 325 mesh)	53.50
Powder Flakes	48.50
Carbonyl Iron:	
97.9-99.8% size 5 to 10 microns	83.00-148.00
Aluminum:	
Carlots, freight allowed	31.00
Atomized, 500 lb drums, freight allowed	33.00
Antimony, 500 lb lots	71.00
Brass, 20-ton lots	31.00-34.25
Bronze, 10-ton lots	51.25-60.00
Phosphor-Copper, 20-ton lots	50.00
Copper:	
Electrolytic	37.25
Reduced	35.25
Lead	7.50*
Magnesium	75.00-85.00
Manganese:	
Minus 100 mesh	57.00
Minus 35 mesh	52.00
Minus 200 mesh	62.00
Nickel unannealed	86.00
Nickel-Silver 5-ton lots	46.00
Silicon	38.50
Solder	8.50*
Stainless Steel, 302	83.00
Zinc, 10-ton lots	18.00-31.00
Tungsten	Dollars
Melting grade, 99% 60 to 200 mesh:	
1000 lb and over	5.85
Less than 1000 lb	6.00
Molybdenum:	
99.9% minus 200 mesh	3.24
Chromium, electrolytic 99% Cr min.	3.50

* Plus cost of metal

Even a Boy can fight Communism with Truth

Kids on Radio Free Europe Send Hope To Pals Behind Iron Curtain

Twelve-year-old Karel Paces, a young Czech found in a German refugee camp, is broadcasting over Radio Free Europe to his Czech friends behind the Iron Curtain.

He is telling them familiar children's stories in their native tongue—stories now denied them by their Communist masters. These stories have a very real meaning to Karel's friends, a meaning ingrained in the folklore of their country.

Karel Paces is giving his friends, the boys and girls of his beloved Czechoslovakia, the truth of their own country and the free world. It is this truth which every American must support now so that it can be used to fight the deceit, darkness and despair which Communist tyranny is spreading through the satellite countries of Europe.

Day and night, Radio Free Europe is exposing Communist lies and propaganda, and sustaining the hope of oppressed millions that some day they will live in a better world.

At least $4,000,000 is needed this year to support and expand the operations of Radio Free Europe and Radio Free Asia. In addition, the Crusade for Freedom is seeking the signatures of Americans, on Freedom-Grams. These will be your personal pledges of hope for a free world.

This Crusade cannot succeed without your help. Your contribution is needed *now* to help support Radio Free Europe and Radio Free Asia . . . to help fight red lies with truth and to win the cold war.

Support this truth campaign now and help bring to millions the promise of future freedom.

Send your contribution to Crusade for Freedom, c/o your local Postmaster

Help Truth Fight Communism
Give To Crusade For Freedom

Contributed in the public interest by

STEEL

The Weekly Magazine of Metalworking

WAREHOUSE STEEL PRODUCTS

(Representative prices, cents per pound, subject to extras, f.o.b. warehouse. City delivery charges are 20 cents per 100 lb except New York, 40 cents; Philadelphia, 25 cents; Birmingham, Cincinnati, San Francisco, St. Paul, 30 cents.)

	SHEETS			STRIP		BARS			Standard Structural Shapes	PLATES	
	H.R. 18 Ga. Heavier*	C.R.	Gal. 10 Ga.†	H.R.*	C.R.*	H.R. Rds.	C.F. Rds.‡	H.R. Alloy 4140††		Carbon	Floor
Baltimore	6.81	7.17	8.37	6.42		6.41	7.42	11.17	6.47	6.47	7.70
Boston	6.51	7.36	8.54	6.56		6.42	7.49	11.18	6.56	6.75	7.98
Buffalo	6.80	6.66	8.42	6.21		5.90	6.95	11.07	6.08	6.30	7.62
Birmingham	6.80	6.66	7.70	6.80		6.80	8.65		6.95	6.10	8.65
Chicago	6.80	6.65	8.00	6.85		6.85	6.80	10.65	6.95	6.95	7.18
Cincinnati	6.15	6.72	8.47	6.14		6.15	7.16	11.07	6.42	6.47	7.60
Cleveland	6.80	6.65	8.14	6.00		5.80	6.90	10.75	6.28	6.12	7.51
Detroit	6.67	6.92	8.64	6.15	7.70	6.12	7.10	10.92	6.42	6.47	7.52
Houston	6.71		8.72	6.80		6.98			6.82	6.78	8.16
Jersey City, N.J.	6.51	7.27	8.47	6.75		6.50	7.78	11.31	6.39	6.60	8.01
Los Angeles	6.60	8.45	9.60	6.75	11.20	6.60	8.00	12.05	6.60	6.65	8.90
Milwaukee	6.67	6.82	8.17	6.00		6.00	7.07	10.82	6.12	6.12	7.30
Moline, Ill.	6.16	7.00	8.35	6.19		6.18	6.91		6.30	6.30	
Newark, N.J.	6.62	7.41	8.63	6.72		6.75	7.55		6.70	6.78	7.18
New York	6.26	7.25	8.42	6.56		6.56	7.51	11.01	6.39	6.60	8.01
Norfolk, Va.	7.60					6.44	8.20		7.25	6.84	7.35
Philadelphia	6.11	7.11	8.30	6.45	8.30	6.42	7.45	10.70	6.17	6.24	7.36
Pittsburgh	6.80	6.65	8.00	6.04		5.85	6.90	10.65	6.05	6.05	7.18
Portland, Oreg.	7.80	9.10	10.05	7.60		7.55	9.40		7.40	7.40	9.25
Richmond, Va.	6.41	6.96	8.68	6.22		6.30	7.60		6.58	6.68	7.80
St. Louis	6.10	6.91	8.00	6.14		6.13	7.20	10.95	6.35	6.35	7.58
St. Paul	6.47	7.31	8.65	6.50		6.40	7.32		6.61	6.61	7.84
San Francisco	6.90	8.20	9.60	6.75		6.65	8.65	12.05	6.50	6.75	8.90
Seattle-Tacoma	7.50	8.24	9.70	7.45		7.45	9.02	11.905	6.87	7.25	9.11
Spokane (city)	7.80	9.25		7.65		7.40	9.50	11.90	7.40	7.05	9.10
Washington	6.51	7.51	8.90	6.85		6.90	8.05		6.95	6.95	8.17

* Prices do not include gage extras; prices include gage and coating extras except Birmingham (coating extra excluded) and Los Angeles (gage extra excluded). † Includes 25-cent special lot quality extra. ‡ As rolled; as annealed. Base quantities 2000 to 9999 lb except as noted. Cold rolled strip 2000 lb and over; cold finished bars 2000 lb and over; 1 500 to 1499 lb; 1000 to 1999 lb.

Ores

Lake Superior Iron Ore

Gross ton, 51½% (natural), lower lake ports

Old range bessemer	$9.45
Old range nonbessemer	9.30
Mesabi bessemer	9.20
Mesabi nonbessemer	9.05
High phosphorus	9.05

After adjustment for analysis, prices will be increased or decreased as the case may be for increases or decreases after Dec. 1, 1950, in applicable lake vessel rates, upper lake rail freights, dock handling charges and taxes thereon.

Eastern Local Iron Ore

Cents per unit del. E. Pa.

Foundry and basic 56-62% concentrates contract	17.00

Foreign Iron Ore

Cents per unit, c.i.f. Atlantic ports

Swedish basic, 60 to 68%:	
Spot	nom.
Long-term contract	24.00
North African hematites (spot)	26.00-28.00
Brazilian iron ore, 67-69% (spot)	32.00

Tungsten Ore

Net ton unit, duty paid

Foreign wolframite and scheelite, per net ton unit	$65.00
Domestic scheelite, mines	65.00

Manganese Ore

Manganese, 48% nearby, $1.18-$1.22 per long ton unit, c.i.f. U. S. ports, duty for buyer's account; shipments against old contracts for 48% ore are being received from some sources at 85c-87c.

Chrome Ore

Gross ton, f.o.b. cars, New York, Philadelphia, Baltimore, Charleston, S. C., plus ocean freight differential for delivery to Portland, Oreg., or Tacoma, Wash.

Indian and African	
48% 2.8:1	$39.00-$42.00
48% 3:1	44.00-45.00
48% no ratio	30.00-32.00
South African Transvaal	
44% no ratio	$27.00-$28.00
48% no ratio	34.00-35.00
Brazilian	
44% 25:1 lump	nom.
Domestic (Rail nearest seller)	
48% 3:1	$39.00

Molybdenum

Sulphide concentrates per lb, molybdenum content, mines	$1.00

REFRACTORIES

(Ceiling prices, effective Sept. 23, 1952, per 1000 units)

Fire Clay Brick

High Heat Duty: Pueblo, Colo., $89.00; Ashland, Grahn, Hayward, Hitchins, Haldeman, Olive Hill, Ky., Athens, Troup, Tex., Beech Creek, Clearfield, Curwensville, Lochhaven, Lumber, Orviston, West Decatur, Pa., Bessemer, Ala., Farber, Mexico, St. Louis, Vandalia, Mo., Ironton, Oak Hill, Parral, Portsmouth, O., Ottawa, Ill., Stevens Pottery, Ga., Woodbridge, N. J., $99.30; Salina, Pa., $101.55; Niles, O., $109; Los Angeles, Pittsburg, Calif., $132.30.

Silica Brick

Standard: Alexandria, Claysburg, Mt. Union, Sproul, Pa., Ensley, Ala., Portsmouth, O., $89.30; Hays, Pa., $105.10; Niles, O., $107; E. Chicago, Ind., Joliet, Rockdale, Ill., $109.70; Cutler, Utah, $116.55; Los Angeles, $122.85.

Insulating Fire Brick

2300° F: Massillon, O., $178.50; Clearfield, Pa., $179.55; Augusta, Ga., Beaver Falls, Zelienople, Pa., Mexico, Mo., $186.90.

Ladle Brick

Dry Pressed: Bessemer, Ala., $64.60; Alsey, Ill., Chester, New Cumberland, W. Va., Freeport, Johnstown, Merrill Station, Pa., Wellsville, O., $69.30; Mexico, Mo., $73.50; Clearfield, Pa., Portsmouth, O., $83; Perla, Ark., $92.40; Los Angeles, $110.25; Pittsburg, Calif., $111.30.

Sleeves

Reesdale, Pa., $127; Johnstown, Pa., $127.30; Clearfield, Pa., $135; St. Louis, $138; Athens, Tex., $140.90.

Nozzles

Reesdale, Pa., $203.20; Johnstown, Pa., $208.40; Clearfield, Pa., $219.45; St. Louis, $224.65; Athens, Tex., $225.20.

Runners

Reesdale, Pa., $158.20; Johnstown, Pa., $161.70; Clearfield, Pa., $168.60; St. Louis, $170.30; Athens, Tex., $174.40.

High-Alumina Brick

50 Per Cent: Clearfield, Pa., St. Louis, Mexico, Mo., $166.30; Danville, Ill., $169.30.
60 Per Cent: St. Louis, Mexico, Vandalia, Mo., $210.20; Danville, Ill., $213.20.
70 Per Cent: St. Louis, Mexico, Vandalia, Mo., $244.85; Danville, Ill., $247.85; Clearfield, Pa., $252.

CALCIUM ALLOYS

Calcium-Manganese-Silicon: (Ca 16-20%, Mn 14-18% and Si 53-56%). Contract, carload, lump, bulk 20.0c per lb of alloy, carload packed 20.8c, ton lot 22.3c, less ton 23.3c. Delivered. Spot add 0.25c.

Calcium-Silicon: (Ca 30-33%, Si 60-65%, Fe 1.50-3%). Contract, carload, lump, bulk 19.0c per lb of alloy, carload packed 20.2c, ton lot 22.1c, less ton 23.6c. Field. Spot add 0.25c.

ZIRCONIUM ALLOYS

12-15% Zirconium Alloy: (Zr 12-15%, Si 30-43%, Fe 10-45%, C 0.20% max.). Contract, c.l. lump, bulk 7.0c per lb of alloy, c.l. packed 7.7c, ton lot 8.5c, less ton 9.35c. Delivered. Spot, add 0.25c.

35-40% Zirconium Alloy: (Zr 35-40%, Si 47-52%, Fe 8-12%, C 0.50% max.). Contract, carload, lump, packed 20.25c per lb of alloy, ton lot 21c, less ton 22.25c. Freight allowed. Spot add 0.25c.

BRIQUETTED ALLOYS

Chromium Briquets: (Weighing approx. 3⅝ lb each and containing exactly 2 lb of Cr). Contract, carload, bulk, 14.50c per lb of briquet, carload packed 15.2c, ton 16.0c, less ton 16.9c. Field. Add 0.25c for notching. Spot, add 0.25c.

Ferromanganese Briquets: (Weighing approx. 3 lb and containing exactly 2 lb of Mn). Contract, carload, bulk 12.4c per lb of briquet, c.l. packaged 13.2c, ton lot 14.0c, less ton 14.8c. Delivered. Add 0.25c for notching. Spot, add 0.25c.

Silicomanganese Briquets: (Weighing approx. 3½ lb and containing exactly 2 lb of Mn and approx. ½ lb of Si). Contract, c.l. bulk 12.6c, per lb of briquet, c.l. packed 13.45c, ton lot 14.25c, less ton 15.15c. Delivered. Add 0.25c for notching. Spot, add 0.25c.

Silicon Briquets: (Large size—weighing approx. 5 lb and containing exactly 2 lb of Si). Contract, carload, bulk 6.95c per lb of briquet, c.l. packed 7.75c, ton lot 8.85c, less ton 9.45c. Delivered. Spot, add 0.25c.

(Small size—weighing approx. 2½ lb and containing exactly 1 lb of Si). Carload, bulk 7.1c, c.l. packed 7.9c, ton lot 8.7c, less ton 9.6c. Delivered. Add 0.25c for notching, small size only. Spot, add 0.25c.

Molybdic-Oxide Briquets: (Containing 2½ lb of Mo each) $1.14 per pound of Mo contained, f.o.b. Langeloth, Pa.

Note: Current prices on chromium, silicon, vanadium, boron and tungsten alloys appeared on page 195, Jan. 12 issue; manganese and titanium alloys and "other" ferroalloys, page 127, Jan. 19.

CEILING PRICES, IRON AND STEEL SCRAP

Prices as set forth in Office of Price Stabilization ceiling price regulation No. 5, as amended Feb. 5, 1952.

STEELMAKING SCRAP COMPOSITE

Jan. 22	$43.00
Jan. 15	43.00
Dec., 1952	43.00
Jan., 1952	43.00
Jan., 1918	40.75

Based on No. 1 heavy melting grade at Pittsburgh, Chicago and eastern Pennsylvania.

Basing point ceiling prices per gross ton from which maximum shipping prices are computed on scrap of dealer and industrial origin; and from which ceiling on-line and ceiling delivered prices are computed on scrap of railroad origin.

Grade 1 Basing Point	No. 1 Bundles Dealer, Industrial	No. 1 Heavy Melt Railroad
Alabama City, Ala.	$39.00	$41.00
Ashland, Ky.	42.00	44.00
Atlanta, Ga.	39.00	41.00
Bethlehem, Pa.	42.00	44.00
Birmingham, Ala.	39.00	41.00
Brackenridge, Pa.	44.00	46.00
Buffalo, N. Y.	43.00	45.00
Butler, Pa.	44.00	46.00
Canton, O.	44.00	46.00
Chicago, Ill.	42.50	44.50
Cincinnati, O.	43.00	45.00
Claymont, Del.	42.50	44.50
Cleveland, O.	43.00	45.00
Coatesville, Pa.	42.50	44.50
Conshohocken, Pa.	42.50	44.50
Detroit, Mich.	41.15	43.15
Duluth, Minn.	40.00	42.00
Harrisburg, Pa.	42.50	44.50
Houston, Tex.	37.00	39.00
Johnstown, Pa.	44.00	46.00
Kansas City, Mo.	39.50	41.50
Kokomo, Ind.	42.00	44.00
Los Angeles	35.00	37.00
Middletown, O.	43.00	45.00
Midland, Pa.	44.00	46.00
Minnequa, Colo.	38.00	40.00
Monessen, Pa.	44.00	46.00
Phoenixville, Pa.	42.50	44.50
Pittsburg, Calif.	35.00	37.00
Pittsburgh, Pa.	44.00	46.00
Portland, Oreg.	35.00	37.00
Portsmouth, O.	42.00	44.00
St. Louis, Mo.	41.00	43.00
San Francisco	35.00	37.00
Seattle, Wash.	35.00	37.00
Sharon, Pa.	44.00	46.00
Sparrows Pt., Md.	42.00	44.00
Steubenville, O.	44.00	46.00
Warren, O.	44.00	46.00
Weirton, W. Va.	44.00	46.00
Youngstown, O.	44.00	46.00

Differentials from Base

Differentials per gross ton for other grades of dealer and industrial scrap:

O-H and Blast Furnace Grades

2. No. 1 Busheling	Base
3. No. 1 Heavy Melting	—$1.00
4. No. 2 Heavy Melting	— 1.00
5. No. 2 Bundles	— 1.00
6. Machine Shop Turnings	—10.00
7. Mixed Borings and Short Turnings	— 6.00
8. Shoveling Turnings	— 6.00
9. No. 2 Busheling	— 4.00
10. Cast Iron Borings	— 6.00

Elec. Furnace and Fdry. Grades

11. Billet, Bloom & Forge Crops	+ 7.50
12. Bar Crops & Plate	+ 5.00
13. Cast Steel	+ 5.00
14. Punchings & Plate Scrap	+ 2.50
15. Electric Furnace Bundles	+ 2.00
Cut Structurals & Plate:	
16. 3 feet and under	+ 3.00
17. 2 feet and under	+ 5.00
18. 1 foot and under	+ 6.00
19. Briquetted Cast Iron Borings	Base
Foundry, Steel:	
20. 2 feet and under	Base
21. 1 foot and under	+ 2.00
22. Springs and Crankshafts	+ 1.00
23. Alloy Free Turnings	— 3.00
24. Heavy Turnings	— 1.00
25. Briquetted Turnings	Base
26. No. 1 Chemical Borings	— 3.00
27. No. 2 Chemical Borings	— 4.00
28. Wrought Iron	+10.00
29. Shafting	+10.00
31. Old Tin & Terne Plated Bundles	—10.00

Unprepared Grades

When compressed constitutes:

32. No. 1 Bundles	— 6.00
33. No. 2 Bundles	— 9.00
34. Other than material suitable for hydraulic compression	— 8.00

Restrictions on Use

(1) Prices for Grades 11 and 23 may be charged only when shipped to a consumer directly from an industrial producer; otherwise ceiling prices shall not exceed prices established for grades 12 and 8, respectively.

(2) Prices established for Grades 26 and 27 may be charged only when sold for use for chemical or annealing purposes, and in the case of Grade 27, for briquetting and direct charge into an electric furnace; otherwise ceiling prices shall not exceed price established for Grade 10.

(3) Prices established for Grade 28 may be charged only when sold to a producer of wrought iron; otherwise ceiling price shall not exceed ceiling price for corresponding grade of basic open-hearth.

(4) Premiums for Grades 11-18, 20 and 21 may be charged only when sold for use in electric and acid open-hearth furnaces or foundries; or in basic O-H or blast furnace under NPA allocation or OPS authorization.

(5) Prices for Grade 29 may be charged only when sold for forging or rerolling purposes.

Differentials from Base

Differentials per gross ton above or below the price of Grade 1 (No. 1 railroad heavy melting steel) for other grades of railroad steel scrap:

2. No. 2 Heavy Melting Steel	—$2.00
3. No. 2 Steel Wheel	Base
4. Hollow Bored Axles and loco. axles with keyways between the wheelseats	Base
5. No. 1 Busheling	— 3.50
6. No. 1 Turnings	— 3.00
7. No. 2 Turnings, Drillings & Borings	—12.00
8. No. 2 Cast Steel and uncut wheelcenters	— 6.00
9. Uncut Frogs, Switches	Base
10. Flues, Tubes & Pipes	— 8.00
11. Structural, Wrought Iron and/or/steel, uncut	— 6.00
12. Destroyed Steel Cars	— 8.00
13. No. 1 Sheet Scrap	— 9.50
14. Scrap Rails, Random Lengths	+ 2.00
15. Rerolling Rails	+ 7.00
Cut Rails:	
16. 3 feet and under	+ 5.00
17. 2 feet and under	+ 6.00
18. 18 inches and under	+ 8.00
19. Cast Steel, No. 1	+ 3.00
20. Uncut Tires	+ 2.00
21. Cut Tires	+ 5.00
Bolsters & Side Frames:	
22. Uncut	Base
23. Cut	+ 3.00
24. Angles, Splice Bars & Tie Plates	+ 5.00
25. Solid Steel Axles	+12.00
26. Steel Wheels, No. 3, oversize	Base
27. Steel Wheels, No. 3	+ 5.00
28. Spring Steel	+ 5.00
29. Couplers & Knuckles	+ 5.00
30. Wrought Iron	+ 8.00
31. Fireboxes	— 8.00
32. Boilers	— 6.00
33. No. 2 Sheet Scrap	—13.00
34. Carsides, Doors, Car Ends, cut apart	— 6.00
35. Unassorted Iron & Steel	— 6.00
36. Unprepared scrap, not suitable for hydraulic compression	— 8.00

Preparation Charges

Ceiling fees per gross ton which may be charged for intransit preparation of any grade of steel scrap of dealer or industrial origin, authorized by OPS are:

(1) For preparing into Grades No. 3, No. 4 or No. 2, $8.

(2) For hydraulically compressing Grade No. 1, $6 per ton; Grade No. 5, $8.

(3) For crushing Grade No. 6, $3. For preparing into:

(4) Grade No. 25, $6.

(5) Grade No. 19, $6.

(6) Grades No. 12, No. 13, No. 14, No. 16, or No. 20, $10.

(7) Grade No. 17 or No. 21, $11.

(8) Grade No. 18, $12.

(9) For hydraulically compressing Grade No. 15, $8.

(10) For preparing into Grade No. 28, $10.

Ceiling fees per gross ton which may be charged for intransit preparation of any grade of steel scrap of railroad origin shall be:

(1) For preparing into Grade No. 1 and Grade No. 2, $8.

(2) For hydraulically compressing Grade No. 13, $6. For preparing into:

(3) Grade No. 16, $4.

(4) Grade No. 17, $5.

(5) Grade No. 18, $7.

(6) Grade No. 21, $4.

(7) Grade No. 23, $4.

Ceiling fees per gross ton which may be charged for intransit preparation of cast iron are limited to:

(1) For preparing Grade No. 8 into Grade No. 7, $9.

(2) For preparing Grade No. 3 into Grade No. 11, $7.

(3) For preparing Grade No. 3 into Grade No. 1, $4.

CAST IRON SCRAP

Ceiling price per gross ton for following grades shall be f.o.b. shipping point:

Cast Iron:

1. No. 1 (Cupola)	$49.00
2. No. 2 (Charging Box)	47.00
3. No. 3 (Hvy. Breakable)	45.00
4. No. 4 (Burnt Cast)	41.00
5. Cast Iron Brake Shoes	41.00
6. Stove Plate	46.00
7. Clean Auto Cast	52.00
8. Unstripped Motor Blocks	43.00
9. Wheels, No. 1	47.00
10. Malleable	55.00
11. Drop broken machinery	52.00

OPEN MARKET

(Delivered prices include broker's commission.)

Birmingham
(Delivered)

Shoveling turnings	$30.00-32.00
Cast iron borings	30.00-32.00
No. 1 cupola cast	44.00-45.00
Stove plate	42.00
Charging box cast	39.00-40.00
Heavy breakable	36.00-37.00
Drop broken machinery	42.00-43.00
Unstripped motor blocks	35.00-36.00

Boston
(F.o.b. shipping point)

No. 1 cupola cast	41.00
Heavy breakable	36.00
Stove plate	34.00-35.00
Unstripped motor blocks	30.00

Buffalo
(Delivered)

No. 1 heavy melting	43.00
No. 2 heavy melting	43.00
No. 1 bundles	44.00
No. 1 busheling	44.00
No. 2 bundles	43.00
Machine shop turnings	34.00
Mixed borings, turnings	38.00
Cast iron borings	38.00
Short shoveling turnings	38.00
No. 1 cupola cast	45.50-46.50
No. 1 machinery cast	49.00-50.00

Chicago
(Delivered)

No. 2 heavy melting	42.50
No. 2 bundles	42.50
Machine shop turnings	30.50-32.50
Mixed borings, turnings	34.50-36.50
Shoveling turnings	34.50-36.50
Cast iron borings	34.50-36.50
No. 1 cupola cast	42.00-44.00
Charging box cast	40.00-42.00
Heavy breakable	37.00-39.00
Burnt cast	33.00-35.00
Cast iron brake shoes	40.00-42.00
Stove plate	40.00-42.00
Clean auto cast	44.00-46.00
Unstripped motor blocks	35.00-37.00
Malleable	46.00-48.00
Drop broken machinery	46.00-48.00

Cleveland
(Delivered)

No. 1 heavy melting	43.00
No. 2 heavy melting	43.00
No. 1 bundles	44.00
No. 2 bundles	43.00
Machine shop turnings	34.00
Mixed borings, turnings	38.00
Shoveling turnings	38.00
Cast iron borings	38.00
(F.o.b. shipping point)	
No. 1 cupola	49.00
Charging box cast	47.00
Burnt cast	41.00
Stove plate	46.00
Clean auto cast	52.00
Unstripped motor blocks	41.00
Malleable	55.00
Drop broken machinery	52.00

Detroit
(F.o.b. shipping point)

No. 1 cupola cast	47.00-48.00
Heavy breakable	43.00-44.00
Clean auto cast	49.00-50.00
Unstripped motor blocks	40.00-41.00
Drop broken machinery	50.00-52.00
Charging box cast	44.00-45.00

Los Angeles
(Delivered)

No. 1 heavy melting	34.00
No. 2 heavy melting	29.00
No. 1 bundles	35.00
No. 2 bundles	29.00
No. 1 cupola cast	45.00
Machine shop turnings	14.00

New York
(Brokers' buying prices)

No. 2 heavy melting	35.99
Mixed borings, turnings	29.99
Machine shop turnings	25.99
Cupola cast	40.00-41.00
Unstripped motor blocks	33.00

Philadelphia

No. 1 heavy melting	41.50†
No. 2 heavy melting	41.50†
No. 1 bundles	42.50†
No. 2 bundles	41.50†
No. 1 busheling	42.50†
Mixed borings, turnings	36.50†
Machine shop turnings	32.50†
Short shoveling turnings	36.50†
No. 1 cupola cast	45.00-46.00††
Unstripped motor blocks	40.00‡
Heavy breakable	45.00§
Machinery cast	52.00††
Charging box cast	48.00††

† Ceiling price. ‡ Nominal.
§ Shipping point. †† Delivered.

Pittsburgh
(Delivered)

No. 2 heavy melting	44.00†
No. 1 bundles	45.00†
No. 2 bundles	44.00†
Machine shop turnings	35.00†
Shovel turnings	39.00†
No. 1 cupola cast	46.00
Heavy breakable	43.00

† Ceiling price.

San Francisco
(Delivered)

No. 2 heavy melting	29.00
Machine shop turnings	14.00
No. 2 bundles	29.00
No. 1 cupola cast	44.00

Seattle
(Delivered)

No. 1 heavy melting	33.00
(F.o.b. shipping point)	
No. 1 bundles	31.00
No. 1 cupola cast	41.00
Heavy breakable	36.00-38.00
Unstripped motor blocks	31.00

St. Louis
(Delivered)

No. 1 cupola	48.00
Unstripped motor blocks	37.00

Youngstown
(Delivered)

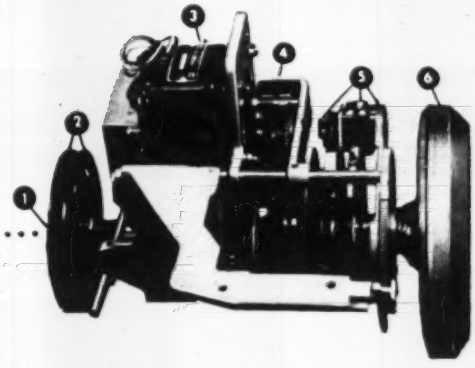
No. 2 heavy melting	43.00
No. 2 bundles	43.00
Machine shop turnings	34.00

HAMILTON, ONT.
(Delivered Prices)

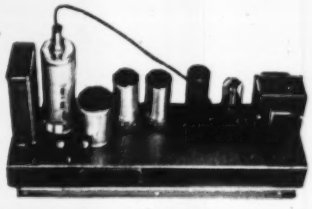
Heavy Melt	$35.50
No. 1 Bundles	35.50
No. 2 Bundles	35.50
Mechanical Bundles	32.00
Mixed Steel Scrap	31.50
Mixed Borings, Turnings	32.50
Rails, Remelting	35.50
Rails, Rerolling	44.80
Busheling	30.00
Busheling new factory:	
Prep'd	33.50
Unprep'd	31.50
Short Steel Turnings	32.50
Cast Iron Grades†	
No. 1 Machinery Cast	50.00

†F.o.b., shipping point.

1. Center line of slidewire and shaft
2. Control cams
3. Balancing motor
4. Spring-loaded no-backlash drive
5. Control slidewires
6. Measuring slidewire



This partially dis-assembled view of Speedomax shows its two-phase Balancing Motor and gears, with a typically "heavy" load of slidewires and contacting cams for signal and control devices. Several more cams, etc., can be added if necessary; only practical limit is physical space on shaft. Smoothness in operating many contacts is an outstanding Speedomax ability.



Amplifier which feeds the Speedomax balancing motor the controlling half of its power. Torque gradient is especially high where needed most—around balance point for prompt, positive balancing. This Amplifier leads its field by large margins in sensitivity and in power output.

Good circuit engineering shows in this Slidewire's non-inductive wiring and in the absence of any flexible leads which might form inductive loops.

CAREER OPPORTUNITIES AT L&N

Expansion program of this long-established firm has many features to attract outstanding recent graduates in engineering and science. Opportunities are in sales field engineering, product and application engineering, research, advertising, market development. Widely-respected policies assure recognition of progress and achievement. Address Personnel Manager for preliminary interview at nearest of 17 L&N offices.

[illegible]

POWER IS PERFORMANCE

... and Speedomax Instruments lead with "huge" 12-watt balancing motors!

• Power underlies good performance, in instruments as in automobiles, machine tools or rolling mills. That's why L&N engineers insist that an automatic instrument should operate as positively and promptly as any other high-grade machine.

Even the first null balance potentiometer Recorder we built, back in 1911, which went to a steel mill, had a 110-volt motor instead of a spring drive to run its balancing mechanism, chart and signalling contacts. And, while its pioneering of balance-method measurement attracted the most attention, its ample power certainly helped establish L&N Recorders as the coming idea in process Instrumentation.

Power has done the same for Speedomax instruments. Twenty years ago, Speedomax pioneered the electronic idea of measurement in a husky, powerful piece of equipment. Today's models have from 2 to 4 times more power in their balancing motors than any other current models of electronic controllers, recorders or indicators.

This power means superior performance in both load-carrying and speed. Load-carrying ability applies especially when the motor operates, in addition, an unusual number of contact devices. But even the most usual Speedomax jobs—automatic control, for instance—can call on the instrument's power for high operating speed in handling the normal number of control devices. The strong, wide-faced, rigidly-mounted cams and gears so typical of Speedomax instruments start moving instantly, move rapidly and stop dead still without coast. Signalling and control action is correspondingly crisp and precise.

Speedomax for industrial use is described in Catalog ND46 (1); additional information for unusual applications is given in Technical Publication ND46(1). Either will be sent on request by our nearest office or from 4957 Stenton Ave., Philadelphia 44, Pa.

LEEDS NORTHRUP

instruments automatic controls • furnaces

Get the facts straight about

TIN

Tin is vital to the free world . . . indispensable to this nation's health, industrial progress, transportation, communications, standard of living, and security.

Tinplate, for example, is strong, can be soldered easily, can be lacquered and lithographed beautifully, and is absolutely nontoxic. In solder, tin wets metals readily, flows easily, and seals sound joints. Tin resists corrosion, too, and is highly malleable.

Yet we continue to seek substitutes for tin . . . continue to strive for that elusive something "just as good."

WHY?

Does it make sense to try to replace one of the most economical production metals known to industry?

Does it make sense when Malaya, the world's largest tin producer and one of the free world's staunchest allies, stands ready to supply tin on a free market for whatever the demands of American industry may be?

It is the purpose of this Bureau to furnish accurate information about tin to American industry, and to promote a clearer understanding between the United States and Malaya.

One of the media used to accomplish this is a monthly newsletter. We'd like to send "Tin News" to you regularly, and with our compliments. All you need do is tell us you'd like to get it.

THE MALAYAN TIN BUREAU

Department 321

1028 Connecticut Avenue, Washington 6, D.C.

MALAYAN

BUREAU

THERE IS NO REAL SUBSTITUTE FOR TIN

The Metal Market

Metals price changes in first few weeks of 1953 exceed last year's rate. Supplies continue to move into balance with demand quicker than Washington indicates

DASH of price changes hasn't run its full course, but it is now past its worst stage. Price movements in the first few weeks of 1953 are several times the rate of last year, with aluminum, nickel, silver and cadmium edging up; lead, zinc and mercury sliding down.

Supply of most metals is moving into balance with demand more rapidly than Washington actions and statements indicate. No one suffers acutely from metal shortages today, and the situation will improve with each passing month. The promise of extra CMP allotments of metals for certain civilian goods in the second quarter will probably be broadened considerably.

Action in Aluminum—Outlook for aluminum is brightening considerably with return to production of nearly all smelters in the Northwest that depend on hydroelectric power. If a deal now in the works for borrowing more Canadian aluminum from Britain goes through, the transition period of the next three months will be smoothed appreciably. The loan which is proposed would be for about 20,000 tons.

American producers and fabricators of aluminum got their expected price increase from OPS last week. Primary metal was allowed a half-cent increase, mill products a 4 per cent higher ceiling. Increases will be passed on automatically to users of aluminum.

Copper Caution—NPA continues to warn that copper controls will be needed after June 30, but the industry disagrees sharply, saying price decontrol will bring a marked improvement in supply. Already producers are poised for the release of price rains, orders are priced as of delivery date rather than as of booking date. OPS expects a 5-9 cent rise in copper when controls are lifted.

Consumers are getting plenty of copper these days, no matter what the price. December deliveries were highest for any month in nearly five years. Imports that month totaled about 60,000 tons, says NPA, and January promises to hold at about that level. February imports are estimated at 55,000 tons. Import duty was suspended until June 30, 1954 in the first bill passed by the new Congress.

Upholds Aluminum Industry

The U. S. aluminum industry isn't the monster some government agencies think it is, says a report of the Joint Committee on Defense Production.

While aluminum prices are substantially the same as they were in 1939, capacity has increased almost ten times. The committee also found nothing inherently wrong with integrated production, a factor largely responsible for the steel industry's growth. An increasing share of total new supply has been made available to nonintegrated fabricators, the group found, and it could see no reason for defense agencies to place creation of new competition ahead of other considerations in planning future programs for aluminum.

National Lead Will Appeal

National Lead Co., New York, plans to appeal the recent decision of the Federal Trade Commission holding that the company violated the law by its methods of selling lead pigments. The decision also affects six other companies.

Company officials believe there was no evidence to justify the conclusions of the majority members. Furthermore, they feel that certain terms of the order exceed the authority of the commission. The company points to the vigorous dissenting opinion of Commissioner Lowell B. Mason, the only present member who heard both oral arguments before the commission.

RFC Buys Bolivian Tin

Three months' production of Bolivia's tin mines will be bought by RFC for refining at the government-owned Texas City, Tex., smelter. Concentrates containing about 5000 long tons of tin, most of it dug since Bolivia nationalized her tin mines, are covered. Price is $1.175 per pound, f.o.b. South American ports. The U. S. State Department, which had insisted on compensating American stockholders in the mines before a deal could be negotiated, evidently O.K.'d the transaction.

Another private trader has joined the fight against RFC selling tin to industry, saying the metal should be taken off its "political pedestal." Citing ex-President Truman's estimate that the government would lose about $2 million from tin operations in fiscal 1954, the company underlined the fact that the country has enough metal immediately stockpiled ($600 million worth) to wage a 4½-year war, and pointed out that consumption today is only about 70 per cent of production. Tin futures today are offered at about 2 cents below RFC spot price. Free world tin production in 1952 is estimated by the Malayan Tin Bureau at or slightly better than the 1951 total of 162,076 tons. Only 32,500 tons of this comes from the Western Hemisphere.

Silver Usage Shifts

Less than one-half of last year's silver consumption went into silverware, while five years ago the proportion was about two-thirds. That significant change was reported by Handy & Harman in its annual review of the silver industry. Industrial users now account for a major part of the silver market, the report states. Last year, use of the metal declined about 11 per cent to 95 million ounces, and the price ranged from a high of 88 cents to a low of 82.75 cents. The metal has been exceedingly active pricewise in 1953, advancing four times to the present level of 85.25 cents.

Slab Zinc Output Rises

Slab zinc production of 961,200 tons in 1952 by United States smelters exceeded the 1951 output by about 3 per cent and came near the all-time record set in 1943.

Shipments of slab zinc from these smelters, however, totaled 896,111 tons in 1952, a 2.5 per cent decline from 1951.

In reporting these figures, the American Zinc Institute Inc. points out that the steel strike's effect on shipments spoiled the chance to equal the record performance of 1950.

Exports were 33-1/3 per cent higher, and shipments for government account were about 9 per cent lower than in 1951.

NONFERROUS METALS

(Cents per pound, carlots, except as otherwise noted)

Primary Metals

Copper: Electrolytic 24.50c, Conn. Valley; Lake 24.62½c, delivered.

Brass Ingots: 85-5-5-5 (No. 115) 27.25c, 88-10-2 (No. 215) 40.00c; 80-10-10 (No. 305) 33.00c; No. 1 yellow (No. 405) 23.25c.

Zinc: Prime western 12.50c; brass special 12.75c; intermediate 13.00c; East St. Louis; high grade 13.50c, delivered.

Lead: Common 13.50c; chemical 13.90c; corroding, 13.90c, St. Louis.

Primary Aluminum: 99% plus, ingots 20.00c, pigs 19.00c. Base prices for 10,000 lb and over. Freight allowed on 500 lb or more but not in excess of rate applicable on 30,000 lb c.l. orders.

Secondary Aluminum: Piston alloys 20.50c; No. 12 foundry alloy (No. 2 grade) 19.50c; steel deoxidizing grades, notch bars, granulated or shot: Grade 1, 18.80c; grade 2, 18.60c; grade 3, 18.40c; grade 4, 18.20c.

Magnesium: Commercially pure (99.8%); standard ingots, 10,000 lb and over 24.50c, f.o.b. Freeport, Tex.

Tin: Grade A, prompt 121.50c.

Antimony: American 99-99.8% and over but not meeting specifications below 34.50c; 99.8% and over (arsenic 0.05% max., other impurities 0.1% max.) 35.00c; f.o.b. Laredo, Tex., for bulk shipments.

Nickel: Electrolytic cathodes, 99.9%, base sizes at refinery, unpacked, 60.00c; 25-lb pigs, 62.00c; "XX" nickel shot, 63.00c; "F" nickel shot or ingots, for addition to cast iron, 60.00c. Prices include import duty.

Mercury: Open market, spot, New York, $216-$220, nominal, per 76-lb flask.

Beryllium Copper: 3.75-4.25% Be, $1.595 per lb of alloy, f.o.b. Reading, Pa.

Cadmium: "Regular" straight or flat forms, $2 dec; special or patented shapes $2.15.

Cobalt: 97.99%, $2.40 per lb for 500 lb (kegs), $2.42 per lb for 100 lb (case); $2.47 per lb under 100 lb.

Gold: U. S. Treasury, $35 per ounce.

Silver: Open market, New York 90.25c per oz.

Platinum: $90-$93 per ounce from refineries.

Palladium: $23-$24 per troy ounce.

Iridium: $175-$185 per troy ounce.

Titanium (sponge form): $5 per pound.

Rolled, Drawn, Extruded Products

COPPER AND BRASS

(Ceiling prices, cents per pound, f.o.b. mill, effective July 1, 1952)

Sheet: Copper 45.52; yellow brass 40.17; commercial bronze, 95% 45.15; 90% 44.38; red brass, 85% 43.10; 80% 42.34; best quality, 41.35; nickel silver, 18% 55.08; phosphor-bronze grade A, 5% 64.71.

Rod: Copper, hot-rolled 41.37; cold-drawn 42.62; yellow brass free cutting, 33.85; commercial bronze 95% 44.84; 90% 44.07; red brass 85% 42.79; 80% 42.03.

Seamless Tubing: Copper 45.56; yellow brass 43.18; commercial bronze, 90% 47.04; red brass, 85% 46.01.

Wire: Yellow brass 40.46; commercial bronze, 95% 45.41; 90% 44.67; red brass, 85% 43.39; 80% 42.63; best quality brass, 41.64.

(Base prices, effective July 1, 1952)

Copper Wire: Bare, soft, f.o.b. eastern mills, 100,0006 lb. lots, 32.75c; 30,000 lb lots, 32.92; l.c.l., 33.42. Weatherproof, 100,000 lb, 33.46; 30,000 lb, 33.85c; l.c.l., 34.35. Magnet wire del., 15,000 lb or more, 38.75; l.c.l., 39.50.

ALUMINUM

(30,000 lb base; freight allowed on 500 lb or more, but not in excess of rate applicable on 30,000 lb c.l. orders. Effective Aug. 4, 1952.)

Sheets and Circles: 2s and 3s mill finish c.l.

Thickness Range Inches	Widths or Diameters, In.	Inc.	Flat Sheet Base*	Coiled Sheet Base	Coiled Sheet Circle† Base
0.249-0.136	12-48		31.6	....	....
0.135-0.096	12-48		32.1	....	....
0.095-0.077	12-48		32.8	30.6	34.9
0.076-0.061	12-48		33.4	30.8	35.1
0.060-0.048	12-48		33.7	31.0	35.4
0.047-0.038	12-48		34.1	31.3	35.7
0.037-0.030	12-48		34.5	31.7	36.3
0.029-0.024	12-48		35.1	32.0	36.8
0.023-0.019	12-36		35.7	32.7	37.5
0.018-0.017	12-36		36.4	33.3	38.4
0.016-0.015	12-36		37.3	34.0	39.5
0.014	12-24		38.3	35.0	40.8
0.013-0.012	12-24		39.3	35.7	41.7
0.011	12-24		40.3	36.8	43.3
0.010-0.0095	12-24		41.4	37.9	44.8
0.009-0.0085	12-24		42.6	39.1	46.6
0.008-0.0075	12-24		44.0	40.3	48.4
0.007	12-18		45.5	41.7	50.6
0.006	12-18		47.0	43.1	55.4

* Lengths 72 to 180 inches. † Maximum diameter, 26 inches.

Screw Machine Stock: 5000 lb and over.

Dia. (in.) or distance across flats	Round R317-T4	Round 178-T4	Hexagonal R-317-T4	Hexagonal 178-T4
0.125	54.6	....	....	....
0.156-0.0188	46.2	....	....	....
0.219-0.313	43.6	....	....	....
0.375	42.0	48.3	....	50.4
0.406	42.0	....	....	....
0.438	42.0	48.3	....	50.4
0.469	42.0	....	....	....
0.500	42.0	48.3	....	50.4
0.531	42.0	....	....	....
0.563	42.0	....	....	47.3
0.594	42.0	....	....	....
0.625	42.0	45.7	....	47.3
0.688	42.0	....	....	47.3
0.750-1.000	41.0	43.1	....	44.6
1.063	41.0	....	....	43.1
1.125-1.500	39.4	41.5	....	43.1
1.563	38.9	....	....	....
1.625	38.3	....	....	41.5
1.688-2.000	38.3	....	....	....

LEAD

(Prices to jobbers f.o.b. Buffalo, Cleveland, Pittsburgh). Sheets: Full rolls, 140 sq ft or more $19.00 per cwt; add 50c cwt 100 sq ft to 140 sq ft. Pipe: Full coils $19.00 per cwt. Traps and bends: List prices plus 43%.

ZINC

Sheets 23.00c, f.o.b. mill 36,000 lb and over. Ribbon zinc in rolls, 19.50-20.50c, f.o.b. mill, 36,000 lb and over. Plates, not over 12-in., 20.75-21.75c; over 12-in., 20.75-21.75c.

"A" NICKEL

(Base prices f.o.b. mill, effective Dec. 15, 1952) Sheets, cold-rolled, 79.50c; Strip, cold-rolled, 83.50c; Rods and shapes, 75.50c; Plates, 77.50c; Seamless tubes, 108.50c.

MONEL

(Base prices f.o.b. mill, effective Dec. 15, 1952) Sheets, cold-rolled 63.00c; Strip, cold-rolled 66.00c; Rods and shapes 61.00c; Plates, 62.00c; Seamless tubes, 96.00c; Shot and blocks, 56.50c.

MAGNESIUM

Extruded Rounds 12 in. long, 1.31 in. in diameter, less than 25 lb, 55.00-62.00c; 25 to 99 lb, 45.00-52.00c; 100 lb to 5000 lb, 41.00c.

TITANIUM

(Prices per lb, 10,000 lb and over, f.o.b. mill) Sheets, $15; sheared mill plate, $12; strip, $15; wire, $10; forgings, $6; hot-rolled and forged bars, $6.

DAILY PRICE RECORD

	Copper	Lead	Zinc	Tin	Aluminum	Antimony	Nickel	Silver
1953								
Jan. 16-22	24.50	13.80	12.50	121.50	20.00	34.50	60.00	85.25
Jan. 15	24.50	13.80	12.50	121.50	20.00	34.50	60.00	84.75
Jan. 14	24.50	13.80	12.50	121.50	20.00	34.50	60.00	84.25
Jan. 13	24.50	13.80	13.00	121.50	20.00	34.50	56.50	83.75
Jan. 12	24.50	13.80	13.00	121.50	20.00	34.50	56.50	83.25
Jan. 7-11	24.50	14.30	13.00	121.50	20.00	34.50	56.50	83.25
Jan. 2-6	24.50	14.55	13.00	121.50	20.00	34.50	56.50	83.25
1952								
Dec. Avg.	24.50	13.925	12.50	121.50	20.00	34.50	56.50	83.25
Nov. Avg.	24.50	13.965	12.50	121.50	20.00	34.688	56.50	83.25
Oct. Avg.	24.50	14.226	13.259	121.50	20.00	39.00	56.50	83.25
Sept. Avg.	*24.50	15.80	13.99	121.50	20.00	39.00	56.50	83.25
Aug. Avg.	24.50	15.80	14.067	121.50	19.923	39.00	56.50	83.25
Jan. 1952 Avg.	24.50	18.80	19.50	109.404	19.00	50.00	56.50	88.00
Jan. 1948 Avg.	21.50	14.825	11.056	94.00	15.00	33.00	33.75	74.625

NOTE: Copper: Electrolytic, del. Conn. Valley; Lead, common grade, del. St. Louis; Zinc, prime western, E. St. Louis; Tin, Straits, del. New York; Aluminum primary ingots, 99%, del.; Antimony, bulk f.o.b. Laredo, Tex.; Nickel, electrolytic cathodes, 99.9% base sizes at refinery unpacked. Silver, open market, New York. Prices, cents per pound; except silver, cents per ounce.

Plating Materials

Chromic Acid: 99.9% flakes, f.o.b. Philadelphia, carloads 27.00c; 5 tons and over 27.50c; 1 to 5 tons, 28.00c; less than 1 ton 28.50c.

Copper Anodes: Base 2000 to 5000 lb; f.o.b. shipping point, freight allowed; Flat, rolled, 42.75c; oval 41.65c.

Nickel Anodes: Rolled oval, carbonized, carloads, 74.50c; 10,000 to 30,000 lb 75.50c; 3000 to 10,000 lb 76.50c; 500 to 3000 lb 77.50c; 100 to 500 lb, 79.50c; under 100 lb, 82.50c; f.o.b. Cleveland.

Nickel Chloride: 36.50c in 100 lb bags; 34.50c in lots of 300 lb through 10,000 lb; 34.00c over 10,000 lb, f.o.b. Cleveland, freight allowed on 300 lb or more.

Sodium Stannate: 25 lb cans only, less than 100 lb to consumers 86.7c; 100 or 350 lb drums only, 100 to 600 lb 71.60c; 700 to 1900 lb, 69c; 2000 to 9900 lb, 67.3c. Freight allowed east of Mississippi and north of Ohio and Potomac rivers.

Tin Anodes: Bar, 1000 lb and over, $1.42; 500 to 999 lb, $1.425; 200 to 499 lb, $1.43; less than 200 lb, $1.445. Freight allowed east of Mississippi and north of Ohio and Potomac.

Zinc Cyanide: 100 lb drums, less than 10 drums 54.30c, 10 or more drums, 52.30c, f.o.b. Niagara Falls, N. Y.

Stannous Sulphate: 100 lb kegs or 400 lb bbl, less than 2000 lb $1.11; more than 2000 lb, $1.09. Freight allowed east of Mississippi and north of Ohio and Potomac rivers.

Stannous Chloride (Anhydrous): In 100 lb bbl, $1.25; 100 lb kegs $1.26, f.o.b. Carteret, N. J. freight allowed on 100 lb or more.

Scrap Metals

Brass Mill Allowances

Ceiling prices in cents per pound for less than 20,000 lb, f.o.b. shipping point effective June 26, 1951.

	Clean Heavy	Rod Ends	Clean Turnings
Copper	21.50	21.50	20.75
Yellow Brass	19.125	18.875	17.875
Commercial Bronze			
95%	20.50	20.25	19.75
90%	20.50	20.25	19.75
Red Brass			
85%	20.25	20.00	19.375
80%	20.125	19.875	19.375
Muntz metal	18.125	17.875	17.375
Nickel silver, 10%	21.50	21.25	10.75
Phos. Bronze, 5%	25.25	25.00	24.00

Copper Scrap Ceiling Prices

(Base prices, cents per pound, less than 40,000 lb f.o.b. point of shipment)

Group I: No. 1 copper 19.25; No. 2 copper wire and mixed heavy 17.75; light copper 16.50; No. 1 borings 19.25; No. 2 borings 17.75; refinery brass, 17.00 per lb of dry Cu content for 50 to 60 per cent material and 17.25 per lb for over 60 per cent material. Group II: No. 1 soft red brass solids 18.50; No. 1 composition borings 19.25 per lb of Cu content plus 63 cents per lb of tin content; mixed brass borings 19.25 per pound of Cu content plus 60 cents per lb of tin content; unlined red car boxes 18.25; lined red car boxes 17.25; cocks and faucets 16.00; mixed brass screens 16.00; zincy bronze solids and borings 16.25.

Aluminum Scrap Ceiling Prices

(Cents per pound, f.o.b. point of shipment, less than 5000 lb)

Segregated plant scrap; 2s solids, copper free, 10.50; high grade borings and turnings, 8.50; No. 12 piston borings and turnings, 7.50. Mixed plant scrap? Copper-free solids, 10.00; dual type, 9.00. Obsolete scrap: Pure old cable, 10.00; sheet and sheet utensils, 7.25; old castings and forgings, 7.75; clean pistons, free of struts, 7.75; pistons with struts, 5.75.

DEALERS' BUYING PRICES

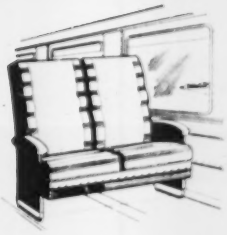
(Cents per pound, New York, in ton lots)

Lead: Heavy 10.75; battery plates 5.50-5.75; linotype and stereotype 12.50; electrotype 10.75; mixed babbitt 13.75.

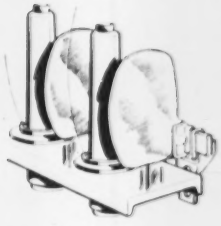
Zinc: Old zinc 5.50; new die cast scrap, 5.50; old die cast scrap, 4.50-4.75.

Our Fiftieth Year

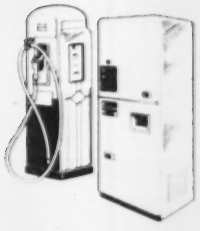
A START FOR THE FUTURE



USE UNBRAKO BUTTON HEAD SCREWS on transportation equipment—door and window frames, paneling, seats.



On textile machinery—slashers, twisters, bobbin shields.



On sheet metal assemblies—beverage coolers, gasoline pumps.

UNBRAKO BUTTON HEAD SOCKET SCREWS feature the following: threads to head, low head height, nonslip internal wrenching, hex socket that minimizes possibility of marred or mutilated heads, fully formed threads—Class 3 fit, heat treated alloy steel, standard sizes from # 8 through ⅜" diameter.

Have you checked our UNBRAKO standards?

We suggest you do, because a standard UNBRAKO delivered from your distributor's stock means faster and better service. A standard will do the job as well as a special at much lower cost. For details about UNBRAKO Standards, write SPS, Jenkintown 33, Pa.

UNBRAKO® SOCKET SCREW DIVISION

SPS JENKINTOWN PENNSYLVANIA

Write for UNBRAKO Standards.

Wire . . .

Wire Prices, Page 111

Boston—Orders against supplemental allotments for some wire products have tightened first quarter schedules. Openings are difficult to find to r more bright manufacturers wire. Buying for second quarter is somewhat slow. Demand for cold-heading wire has slackened in spots, but is still in production to the extent of semifinished capacity for that grade. Orders for upholstery spring wire are heavy. Most mills are behind schedule and under pressure for shipment. Mechanical spring requirements are not impressive and more music wire is available for stock shipments. Galvanized wire is inclined to drag.

Sheets, Strip . . .

Sheet and Strip Prices, Page 109 & 110

Cleveland—Except for hot-dipped galvanized sheets, there isn't any sign of easing demand in the light, flat-rolled steel market. Galvanized sheets are moving at a slower pace seasonally, but the further fact that substantial addition to galvanized capacity has come into production in recent weeks also is seen as a factor bearing on overall demand. Hot and cold-rolled sheets are extremely tight and expectations now are there will be little relief before late in the year, if then. Producers are booking tonnage for second quarter where openings in schedules permit, but some plants are so fully occupied with carryover and rated tonnage, opening of books for the second quarter was little more than a formality.

Boston—Automotive suppliers are under heaviest pressure for delivery on parts and in all cases are having trouble obtaining steel. Strong demand is developing for 430 series of stainless. Some producers are back on voluntary allocation, being sold into June.

New York—Although there is not the pressure for galvanized sheets that there is for hot and cold-rolled carbon, there is still a substantial movement and most sellers anticipate a pickup as the spring building season approaches. Most direct consumers of galvanized sheets assert they do not find it easy to obtain tonnage from the mills. Warehouse stocks are better, due in part to the fact mills are under quota obligations to distributors and also the fact needs of consumers are not sufficiently strong to warrant buyers in paying warehouse premiums in most cases.

Pittsburgh—Strong demand for cold-rolled sheets may result in some carryover to third quarter.

Philadelphia—Pressure for hot and cold-rolled sheets for commercial consumption is as strong as at any time in months. Most mills are booked solidly as far ahead as they care to commit themselves. Producers are taking all the business they care to schedule at the moment, moving on a selective basis. Certain sellers are booking only on a month-to-month basis, with most opening their books this week for May. A leading seller virtually blanked out April in an effort to become more current.

Los Angeles—Order carryover of most steel products including flat-rolled is expected to be worked off by district steelmakers according to this schedule: Bethlehem Pacific Coast Steel Corp., by end of February; Columbia-Geneva Division, U. S. Steel Corp., early February; Kaiser Steel Corp., early April.

Steel Bars . . .

Bar Prices, Page 109

Boston—Demand for carbon and alloy bars for armament accounts for substantial volume. Numerous first quarter commercial tickets are not being converted to orders. Limited openings point toward large carryovers despite cautious scheduling beyond defense requirements.

New York—Hot carbon bar sellers, who have not opened their books on non-defense work for the entire second quarter but rather are doing so on a month-to-month basis, are taking action this week for May.

Philadelphia—Small rounds in hot carbon and large rounds in cold alloy appear to be the only relatively easy spots in bars. Otherwise, the bar supply situation seems to be as tight as a drum.

Pittsburgh—Large diameter bars continue in critical supply with no easing in demand in early prospect.

Cleveland—Not much change in supply conditions in the large size carbon and alloy bars is expected soon. Military and high-rated defense demands continue to press on the market with the result regular commercial requirements are going unsatisfied. Small sizes are fairly plentiful.

Plates . . .

Plate Prices, Page 109

New York—Local shipyards and other fabricators of plates, particularly those requiring heavier gages, are having difficulty obtaining tonnage in sufficient volume to meet needs. Only in strip plate do shipments appear to be fairly adequate and even in this material it is difficult now to place new orders for delivery much before May.

Boston—Floor plates excepted, deliveries are more extended on specialties. Difficulty centers largely in obtaining cladding material, notably nickel-bearing stainless. Demand for sheared carbon plates is in excess of supply and is piling up against an expected carryover, larger than indicated earlier with most mills.

Philadelphia—Some plate mills, booking on a month-to-month basis, are opening books this week for May on non-defense tonnage. They are fairly swamped with applications, and prospects are schedules will be filled quickly.

Pittsburgh—Steel plate consumers' inventories are unbalanced. One tank builder is slowed down by lack of smaller gage plates for tank bottoms.

Seattle—Plates continue scarce although supply conditions are reported improved in some quarters. Several important jobs, involving tanks for storage at air fields, also for the Atomic Energy Commission, are up for early action.

Birmingham—District plate mills' order books are filled for second quarter. Military demand is supplemented by needs of the area's car manufacturing plant.

Tubular Goods . . .

Tubular Goods Prices, Page 113

New York—Reflecting the recent decrease in the price of zinc, the United States Steel Export Co has revised export base prices as follows, with freight included to New York, Philadelphia and Baltimore, effective with shipments from producing mills Jan. 15: Standard pipe, t. & c., galvanized buttweld, 2½ and 3-inch, 17.45 per cent discount; galvanized seamless, 2-inch, 1.90 per cent discount; 2½ and 3-inch, 3.65 per cent discount; 3½ and 4-inch, 5.65 per cent discount, and 5 and 6-inch, 10.50 per cent discount; English gas tubes, galvanized buttweld, 2½ and 3-inch, 19.05 per cent discount; galvanized plain wire, $6.67 per 100 pounds.

New York—While few distributors of merchant pipe are holding up on mill shipments, there is a seasonal lag in demand from the building trade. As spring approaches, however, this situation should change and it is for this reason jobbers generally are laying in all the tonnage offered.

Boston—Only a handful of pipe distributors trimmed off buttweld tonnage from March allotments and the volume involved is slight. Jobber stocks of this grade are generally balanced, but most are reluctant to turn down tonnage, fearing loss of position on mill books. Direct shipments of buttweld are sold through second quarter. While stocks of seamless, 12-inch and larger are sufficient, smaller sizes are readily absorbed to extent of allocations. Mechanical tubing, 1½-inch and larger, is sold into June.

Cleveland—Pipe jobbers' stocks of buttweld pipe have been increasing of late, reflecting steady receipts from the mills and some slackening of demand due to the seasonal lag in building operations. Tight supply conditions continue, however, and producers do not expect any real easing in the situation before third quarter. Meanwhile, seamless pipe is in as tight supply as ever with demand continuing strong. Galvanized pipe discounts have been fluctuating over recent weeks. Last week, leading producers increased their discounts to reflect the half cent decline in the price of zinc to 12.50c per pound.

St. Louis—Pipe demand remains steady and moderately heavy. Second quarter books, opened a week ago, were quickly filled. Pressure is strongest for half, three-quarter and one-inch sizes in preparation for spring housing construction. Utilities are actively in the market.

Los Angeles—Construction of sewers, storm drains, and pipe lines in southern California reached an all-time peak last year with valuation of $51,656,177 compared with $27,668,279 in 1951. Kaiser Steel Corp.

"no more GAMBLING on tool steel selection"

(⅓ actual size; Selector is in 3 colors)

That's what one of the thousands of pleased users says about his CRUCIBLE TOOL STEEL SELECTOR, the new, simple, handy method of picking the right steel, *right* from the start. Since Crucible announced this Selector two years ago, thousands of tool steel users have received their Selectors . . . and here's what some of them say—

"Handiest selector I've ever seen!"

"Saves me time and headaches"

"It's so logical—you begin with the application".

You can be sure the answer you get with your Crucible Tool Steel Selector will be just right in every case, for this Selector covers 22 tool steels which fit 98% of all tool steel applications. And when—with a flip of the round dial—you get the answer, you'll get the steel FAST, too, because all the tool steels on the Selector are right in stock, in all our 26 conveniently-located warehouses.

This Selector is bound to be a big help to you—so write for yours today. There is no obligation whatsoever. Just fill in the coupon and mail now . . . before you turn this page and forget! CRUCIBLE STEEL COMPANY OF AMERICA, Chrysler Building, New York 17, New York.

Here's how it works:

To use the Selector, all you need know is the characteristics that come with the job: type and condition of material to be worked, the number of pieces to be produced, the method of working, and the condition of the equipment to be used.

FOUR STEPS—and you've got the right answer!

1. Move arrow to major class covering application
2. Select sub-group which best fits application
3. Note major tool characteristics (under arrow) and other characteristics in cut-outs for each grade in sub-group
4. Select tool steel indicated

That's all there is to it!

Here's an example:

Application—Deep drawing die for steel

Major Class—Metal Forming—Cold

Sub-Group—Special Purpose

Tool Characteristics—Wear Resistance

Tool Steel—Airdi 150

One turn of the dial does it!

And you're sure you're right!

Crucible Steel Company of America
Dept. S, Chrysler Building, 405 Lexington Avenue
New York 17, N. Y.
Gentlemen:
Sure! I want my free CRUCIBLE TOOL STEEL SELECTOR!

Name Title

Company

Street

City State

CRUCIBLE

first name in special purpose steels

TOOL STEELS

52 years of Fine steelmaking

Branch Offices and Warehouses: ATLANTA • BALTIMORE • BOSTON • BUFFALO • CHARLOTTE • CHICAGO • CINCINNATI • CLEVELAND • DENVER • DETROIT HOUSTON, TEXAS • INDIANAPOLIS • LOS ANGELES • MILWAUKEE • NEWARK • NEW HAVEN • NEW YORK • PHILADELPHIA • PITTSBURGH • PROVIDENCE ROCKFORD • SAN FRANCISCO • SEATTLE • SPRINGFIELD, MASS. • ST. LOUIS • SYRACUSE • TORONTO, ONT. • WASHINGTON, D. C.

E. Chicago
Cleveland
Mexico City, D.F.
Wherever You Are
"YOU'RE WELDS AHEAD"
with
CHAMPION
WELDING ELECTRODES
• Champion Welding Electrodes and Champion Welding Accessories live up to their name for superiority from coast to coast.
Choose Champion and insure complete satisfaction on every application.
Detailed bulletin regarding YOUR specific problems on request. Send for it.
THE CHAMPION RIVET CO.
CLEVELAND, OHIO • East Chicago, Ind.

Standard
..Specials
STEEL WASHERS
FOR EVERY NEED
A DEPENDABLE SUPPLIER
FOR 38 YEARS . . .
Your requirements for standard and special steel washers are sure to be satisfied at Joliet. A bank containing thousands of special dies in many shapes and forms, 9/32" to 8" O.D., gauges No. 28 to 3/8", stands ready to answer your needs. A VARIETY OF FINISHES IS AVAILABLE to meet your special needs, including: Electro-plating, Galvanizing, Parkerizing, and Cyanide hardening.
After All!
THERE'S NO SUBSTITUTE
FOR QUALITY AND SERVICE
Your emergency requirements are our special concern.
202 CONNELL AVE.
JOLIET, ILLINOIS
JOLIET
WROUGHT
WASHER CO.

production of large diameter pipe is reduced.

Seattle Cast iron pipe market is slow but supply houses anticipate improved demand within 30 days. Mills are evidently catching up on orders as deliveries to this area have materially shortened in recent months.

Semifinished Steel . . .

Semifinished Prices, Page 109

Los Angeles Kaiser Steel Corp. boosted steel capacity at its Fontana Works from 1,380,000 to 1,536,000 ingot tons annually by completion of a ninth open hearth furnace, a major unit of its current $65 million expansion program. The addition raised Kaiser's share of western rated ingot capacity to 24.5 per cent, exceeded only by Columbia-Geneva Division, U. S. Steel Corp. at 33 per cent.

Structural Shapes . . .

Structural Shape Prices, Page 109

Boston Allotments for bridges include structurals without required plate tonnage for specific projects. Larger structural shapes are sold up to allotments through second quarter and are extended to August-September on deliveries.

New York State thruway work features structural activity, with bids closing this week on 9000 tons of approach work for the Hudson river bridge, off Rockland county, and a substantial volume of work in Greene and Montgomery counties coming up for bids Feb. 11.

Philadelphia Considerable bridge work and other types of heavy construction are before the market but there is a relative dearth of light structural business.

Pittsburgh Demand is strong for structurals. Fabricators are seeking to bolster inventories in anticipation of active spring and summer business.

Reinforcing Bars . . .

Reinforcing Bar Prices, Page 109

Cleveland Building operations are off seasonally but open weather this winter has permitted considerably more construction than usual. Current demand for reinforcing steel is described as strong. Supplies are substantially improved as compared with a year ago. Expectations are supply will progressively improve through the year. Fabricators are anticipating continued steady demand. Substantial public work is in sight and more is reported in the making. A large volume of school work is in prospect in Cleveland alone, much of this calling for reinforcing steel. Something like $6,528,000 is available for school building this year in Cleveland, it is reported. About $3,685,000 remains in unfinished business from a building program outlined in 1946. In addition it is suggested that if the Cleveland school facilities are to keep pace with the increase in population additional school buildings and additions costing $4,590,000 will be needed.

Tool Steel . . .

Tool Steel Prices, Page 111

New York—Shipments of high speed and tool steel (excluding hollow drill steel) declined in November following a four-month upturn beginning during the steel strike last summer. November shipments, reports the American Iron & Steel Institute, totaled 8960 net tons, comparing with 10,429 in October and with 13,645 in November, 1951.

Shipments in the first 11 months last year amounted to 112,442 net tons, decline of 49,500 compared with 11 month shipments of 161,942 in 1951. The decline was experienced in the first half of the year reflecting the catching up of supply with demand prior to the outbreak of the steel strike in June.

Conversion Steel . . .

Chicago—Conversion arrangements in production of sheets and bars are strongly sought. Leading in the search are automobile builders. Some farm implement manufacturers are in the picture too. In most cases fast processing is desired. One mill here which has been active in conversion was forced to carry over considerable ingot from fourth quarter and has declined to book more tonnage. Its capacity for conversion of slabs has not been fully committed, largely because slabs were not obtainable. Recently, however, supply of slabs has improved suggesting that some steelmakers find it more convenient to sell their output as slabs rather than cold-rolled strip.

Pig Iron . . .

Pig Iron Prices, Page 108

Philadelphia—Basic iron supply is tight with some mills scouring the market for such tonnage as they can obtain for fairly early delivery. Even foreign iron, assuming the premiums were not too stiff, would be acceptable, it is said. Supply of foundry iron is adequate, especially with a fair volume of southern iron coming into this district and with most gray iron foundries operating on a somewhat limited basis.

Boston—Mystic furnace at Everett is again producing after repairs. Demand for foundry iron lags and unless an increase in melt materializes this furnace will soon start toward rebuilding depleted stocks. Other furnaces continue to offer tonnage here.

New York—Foundry pig iron supply and demand continue in easy balance. Foundry operations are somewhat improved, with resulting increase in consumption. Operations, however, are still well short of normal capacity and supply of iron is, if anything, more than sufficient to meet requirements.

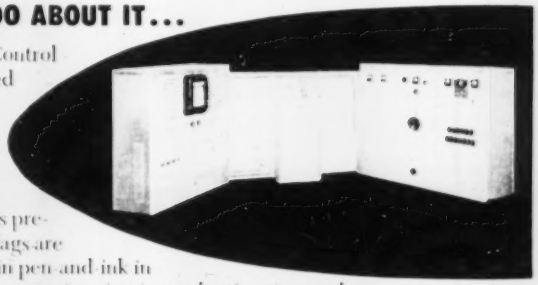
Buffalo—Leading merchant pig iron producers have no trouble finding an outlet for their current output. Automotive and home appliance industries continue active buyers. Approximately 80 per cent of current output is going into steel production. Rail shipments continue substantial to Michigan melters.

Cleveland—Merchant iron sellers

Are You Wasting Critical and Expensive Materials In Your Slag Heap?

Steel producers know that up to 20% of the alloying elements used in special steels, which have to be present, often are lost in the slag. Constant and tedious laboratory analysis of both the steel *and* the slag is necessary to maintain proper production control. In addition to loss of money in replacing these elements, much time can be wasted in actual production.

HERE'S WHAT YOU CAN DO ABOUT IT...



The ARL Production Control Quantometer—long used for chemical analysis of steel and other alloys—has now been adapted for the analysis of slags! Accurate percentages of elements present in *both* steel and slags are recorded permanently in pen-and-ink in less than two minutes...a great saving in production time and money. This makes it possible to prevent material loss *before* it occurs. Individual Quantometers are not limited to a single type of analysis, but can be designed to meet the requirements of many plant problems. As many as 25 elements as selected by the user can be accurately measured on the instrument—up to 20 simultaneously. The ARL Quantometer is the most advanced type of spectrometer yet developed, and its use can mean a great saving to you in production control costs and vital materials conservation. Write for complete information.

THE ARL LINE ALSO INCLUDES 1.5 AND 2-METER SPECTROGRAPHS, PRECISION SOURCE UNITS, RAMAN SPECTROGRAPHS AND RELATED ACCESSORIES.

Applied Research Laboratories
SPECTROCHEMICAL EQUIPMENT
3717 PARK PLACE GLENDALE 8, CALIFORNIA
NEW YORK • PITTSBURGH • DETROIT • CHICAGO • DALLAS • LOS ANGELES

are disposing of all their tonnage but consumer pressure is noticeably off compared with some months back. This is explained by continued sluggish foundry operations. Even the heavier castings shops appear to be slowing down.

Chicago—Foundrymen are more concerned as to whether the present improvement in orders will hold than they are over materials to get out production. Currently, there is enough of everything except nickel. Pig iron isn't plentiful but there is enough. All but one of the district's 42 blast furnaces are active.

Seattle—Australian pig iron is again competing in the Pacific Coast market after a long absence. More than 1000 tons have been purchased by Seattle and Portland foundries, other tonnages being taken by California and British Columbia buyers. The iron sells at $3 to $3.50 under the domestic market. It is understood to be low in silicon and high in phosphorus. Domestic iron is available in fairly large quantities.

Iron Ore . . .

Iron Ore Prices, Page 115

Cleveland—Reflecting the fast pace of blast furnace operations, the Lake Superior Iron Ore Association reports consumption of iron ore by the furnaces in December was 8,219,924 gross tons, increase of 394,276 tons compared with consumption of 7,825,648 tons in November. In December, 1951, consumption totaled 7,639,156 tons.

Total consumption for 1952 was 78,340,223 tons, drop of 11,029,216 tons from the 89,369,439 tons used in 1951. The decline was due almost entirely to the suspension of steelmaking operations during June and July because of the steel strike.

Stocks of iron ore on hand at furnaces and Lake Erie docks on Jan. 1 totaled 45,171,753 tons. This was 1,461,094 tons more than the 43,710,659 tons on hand Jan. 1, 1952. As the new year opened 201 blast furnaces were operating, 6 more than a year ago.

Scrap . . .

Scrap Prices, Page 116

Washington—The Office of Price Stabilization amended CPR 5 through amendment 12, effective Jan. 16, restating the definition of scrap broker, and changing the basis of applying the $1.50 per gross ton deduction from shipping point ceiling prices where the purchaser is required to perform certain operations in moving the scrap.

An amendment to the original order defining a broker appears to have led to some confusion in the matter of payment of commissions in that the modification required a person to be primarily a broker as contrasted with his being a dealer in scrap. Amendment 12 restores the original wording of the order so that the distinction is not between scrap brokers and scrap dealers, but between brokers regularly engaged in the scrap business and persons who are not regularly engaged in the business.

Further amendment of the order provides that where scrap is sold on terms which require the purchaser to remove the scrap by truck from the premises of the seller a deduction of $1.50 a gross ton must be made from the applicable shipping point ceiling price. Previously, the deduction of $1.50 applied where the purchaser was required to load the scrap on the transporting vehicle or place it f.a.s.

New York—Scrap brokers are paying higher prices for unstripped motor blocks and are quick to pick up other cast grades offered for sale at unchanged levels. The general tone of the cast scrap market is much improved, due at least in part to buying by the Morrisville, Pa. consumer.

Buffalo—Despite favorable weather the flow of scrap has reached low ebb here. One of the mills is drawing from reserve stocks to maintain ingot production. No apparent reason is given for the drop in new scrap supplies. Meanwhile, cast scrap continues weak as dealers seek out buyers.

Philadelphia—Substantial volume of charging box cast and unstripped motor blocks for Morrisville, Pa., at higher prices than have prevailed in the district recently has firmed up the entire market on cast scrap. Charging box has been purchased for Morrisville at slightly over $48 delivered, and unstripped motor blocks at $40 delivered. In addition, the Morrisville consumer has been extending purchases of open-hearth steel scrap.

Pittsburgh—The market in all grades of scrap is sluggish with prime movers electric furnace grades. Little activity is reported in open-hearth and cast grades. Revised buying policy is in the offing. Reportedly, mills are buying on a strict month-to-month basis and there is more rigid adherence to the policy of completing shipments within 30 days.

Cleveland—With steelmaking operations booming along at capacity the market for steelmaking grades of scrap continues to display strength although the mills are noticeably more selective in accepting material. Good quality steel grades are not too plentiful and are being sought by the mills. Turnings are reportedly hard to move but when a tonnage is taken it is still at ceiling price. The cast grades continue weak. Small lots of the better cast command ceiling but large lots when moved go at concessions of $3 to $4. The exact market level on unstripped motor blocks is difficult to determine. This material is plentiful and is moving sluggishly. Some dealers think the top for this grade of scrap is $41, a strictly nominal figure.

Chicago—Open weather is facilitating the movement of scrap in the Midwest. This plus the fact that supply is comfortable makes for a stable situation. Steel plants have at least 60 days' supply and intake is in close balance with consumption. Steelmaking is at an all-time high. Cast scrap remains stagnant. Supply is great and demand light.

Detroit—Pressure is high for in-

Accurate

STAMPED PARTS IN MANY METALS

Here, you'll find creative engineering ability, metalworking experience and precision craftsmanship—to meet stamping problems in a wide variety of metals, such as:

TITANIUM	STAINLESS STEEL
COPPER	CARBON STEELS
BRASS	ALUMINUM
BRONZE	ALUMINUM ALLOYS

Bellows (Expansion Joint) stamped in stainless steel (also monel metal) for Breeze Corporation, Inc., of Newark, N.J.

WORCESTER STAMPED METAL ©

Light, medium and heavy stampings deep drawn in all shapes and sizes.

WORCESTER STAMPED METAL Company

10 HUNT ST., WORCESTER, MASS., U. S. A.

SPECIALISTS IN SKILLED STAMPING SERVICE

dustrial scrap for open-hearth and electric furnace use. Blast furnace material demand, however, is weakening, only limited quantities currently being purchased. Cast scrap remains in weak demand. Stocks at electric furnaces are more comfortable. Some of the recent market activity resulted from buying by out-of-district mills.

St. Louis—Open-hearth scrap demand continues strong but demand for cast grades is virtually nil. Offerings from railroad and country sources are light. Dealers foresee no pickup in rails before spring, but anticipate offerings then may be better than usual. Railroads have been short of scrap-gathering labor. Mill ground stocks range from 30 to 75 days, but poor shipments are steadily reducing them. Steel castings plants' stocks are unusually good, some as high as 90 days.

Birmingham—Scrap steel demand slowed down somewhat recently with shipments confined largely to tonnage under commitment. The cast market is especially slow with cupola cast, the most wanted item, quoted at $41 to $45.

Los Angeles—Local steelmaking scrap is in good supply and plenty of remote material is reported available in Arizona, New Mexico and Utah. Demand is light.

San Francisco—Consumption continues heavy, but steelmaking grades of scrap remain in satisfactory supply. Prices are steady all along the line.

Seattle—First shipments of steel scrap from British Columbia in four years arrived here recently, indicating an improved supply situation across the border in Canada where export licenses have been unobtainable for a long time. As a whole the scrap situation is satisfactory to the large consumers who are paying $2 under ceiling for heavy melting, $31 for bundles and $29 to $31 for uncleaned motor blocks on which the ceiling is $43. Bethlehem Pacific Coast Steel Corp. is obtaining 10,000 tons of high grade scrap in dismantling the former Munson liner *Southern Cross*.

Warehouse . . .

Warehouse Prices, Page 115

Washington—Dollars-and-cents markups per ton for use in figuring ceiling prices of steel imports in three separate categories have been established by the Office of Price Stabilization. Also, percentage markups for warehousing imported steel in line with those provided for domestic steel have been set up. The actions were taken under CPR 31, SR 2, effective Jan. 21.

Ceiling prices are figured by applying the specific markups to landed cost. Specific markups of $15, $20, and $25 per ton are provided for the different categories.

The action puts into a single regulation all pricing provisions for imported steel for those covered by CPR 31 and provides a clear method for establishing ceiling prices in line with those for domestic steel.

Need for the action is emphasized by industry reports importation has increased almost 10 times over the

Cessna Bendix Pratt Packa

Budd **Pick a Name** Gibson

Sikorsky General Ele

A. V. Roe Lewyt

McDonnell Twin Coach

American Northrop

MacDonald Oldsmobile

Douglas Beech

North Amer Western Ele

Canadair Allison

Ryan Aero Westingho

Goodyear Hughes

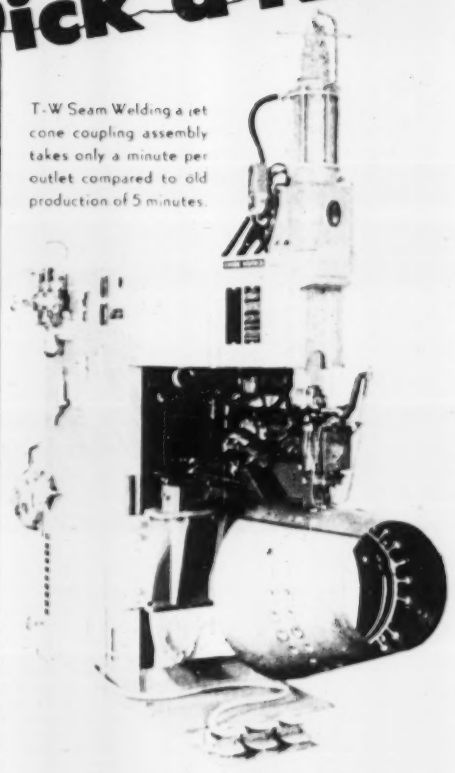
Glen Martin Consolidat

Boeing Harrison

Solar Aircr United Airc

ChanceVou Heintz

T-W Seam Welding a jet cone coupling assembly takes only a minute per outlet compared to old production of 5 minutes.



Any one of them uses T-W Resistance Welders to meet Military Specs

● Users of T-W resistance welders have been meeting military specs for some 12 years. When you meet up with the current specifications Mil-W-6860 and 6858 (formerly AN-W-30 and 32), take advantage of this experience. Whether your job is ordnance, aircraft parts, radar, or what have you—you can meet military specifications with T-W welders.

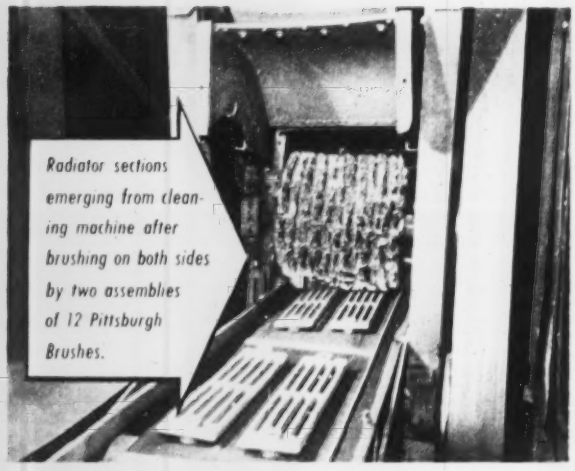
Call on Taylor-Winfield for counsel and assistance on your production. All sizes and styles of resistance welders.

TAYLOR-WINFIELD CORPORATION · WARREN, OHIO

Sales and Service in All Principal Cities

RESISTANCE WELDERS SINCE 1898

TW TAYLOR-WINFIELD RESISTANCE WELDERS



Radiator sections emerging from cleaning machine after brushing on both sides by two assemblies of 12 Pittsburgh Brushes.

Pittsburgh Brushes can help you solve problems like these!

Cleaning Narrow Spaces—National Radiator Company, Johnstown, Pa., cleans 30,000 radiator sections a week! To insure a perfect final finish, even the narrowest spaces must be absolutely clean prior to assembly. Pittsburgh engineers were asked to design a brush that would reach these spaces and would fit National's existing machine. Successful? National reports: "Pittsburgh Brushes do a better job of cleaning and are more economical!"

Preparing Chills—At Continental Foundry & Machine Co., East Chicago, Indiana, chills used to cast iron rolls must be cleaned of the oxidized metal remaining from previous usage, as well as dirt and grease accumulated in storage. After experimenting with other brushes, Continental chose Pittsburgh because they "do the job better and stand up longer than any previously used!"

Improving Original Equipment—The Sommer and Maca Glass Machinery Co., Chicago, Illinois, uses Pittsburgh Brushes in the automatic washing machines they manufacture. Brushes formerly used simply didn't have the over-all density pattern needed. Pittsburgh engineers studied the problem and designed a brush which Sommer and Maca approved "because of (its) denser bristle pattern and lower cost."

WRITE TODAY FOR FREE BOOKLET!

Write today for a free copy of our booklet that shows, through actual case histories, how Pittsburgh cuts brushing costs. Address: Pittsburgh Plate Glass Company, *Brush Div.*, Dept. W-11, 3221 Frederick Ave., Baltimore 29, Maryland.

PITTSBURGH

Power Driven

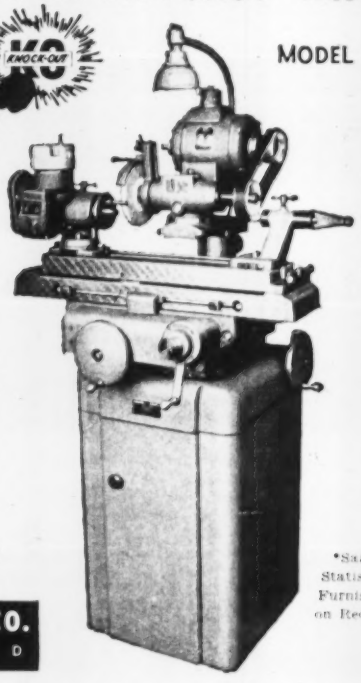
BRUSHES

BRUSHES • PAINTS • GLASS • CHEMICALS • PLASTICS

PITTSBURGH PLATE GLASS COMPANY

There's a reason 76%* of all popularly-priced Tool and Cutter Grinders sold in 1952 were "Knock-Outs"

MODEL B860

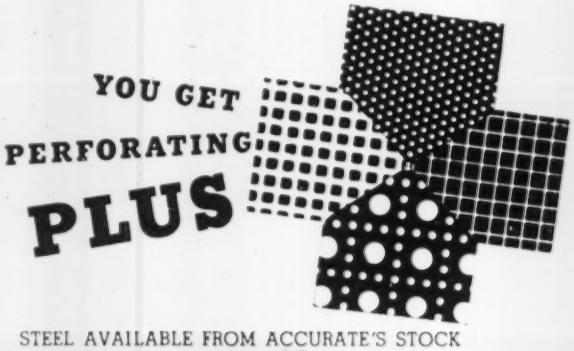


Will do anything that machines costing 2 or 3 times more will do . . . yes and in less time.

Distributed Only Through Franchise Dealers

K. O. LEE CO.
ABERDEEN, S. D.

*Sales Statistics Furnished on Request



STEEL AVAILABLE FROM ACCURATE'S STOCK

ACCURATE PERFORATING GIVES YOU THESE PERFORATING **PLUS** EXTRAS

PLUS Experienced "Know How"
PLUS Engineering Consultation
PLUS Special Dies for Your Needs

Whether you need pinpoint perforation for a coffee filter or an ornamental grille for an ocean liner, Accurate Perforating offers all these extras PLUS—a price that's hard to beat. Write today for your free catalog on Accurate Perforated materials.

SERVING THESE INDUSTRIES:
AIRCRAFT • AUTOMOTIVE • COMMUNICATIONS • ELECTRICAL EQUIPMENT • FARM MACHINERY • HEATING • RADIO AND RADAR • RAILROADS • SHIP BUILDING • STEEL • WASHING MACHINES

IN THESE MATERIALS:
ALUMINUM • BRASS • BRONZE • COPPER • LEAD • MONEL METAL • STEEL • MASONITE • STAINLESS STEEL • PLYWOOD • PAPER

ACCURATE
PERFORATING COMPANY
1101 South Kedzie Avenue, Chicago 12, Illinois

amount imported before Korea and that a number of new steel importers and new warehousemen of imported steel have started in business.

Philadelphia Warehouses continue to do a brisk business in virtually all major lines. Plates, shapes, bars and sheets are all moving well, except for small hot rounds and galvanized sheets, and in both of these latter lines, business could be worse.

Cleveland Warehouse order volume is holding up with no sign present of any slackening in consumer requirements. Stocks are a little better but hot and cold-rolled sheets, large-size bars, heavy plates and certain structural sections are not plentiful. Distributors do not anticipate much change in supply conditions before third quarter. Contributing to current strong demand being experienced is the fact open weather is permitting building operations on a larger than usual seasonal scale.

Chicago Demand is strong for all standard products, there being no indication consumers are reaching a state of supply sufficiency.

St. Louis Warehouse stocks are increasing slightly as result of slower sales and steady receipts from mills.

Metallurgical Coke . . .

Metallurgical Coke Prices, Page 113

Cleveland—Spotty operations in the foundry industry have not resulted in any noticeable easing in demand for oven foundry coke. Sellers are disposing of all their tonnage though they are soliciting business more actively than formerly. Some outside coke is coming into this area from as far away as Alabama at a delivered price 50 cents per ton over the local market. The tonnage involved, however, is insignificant. Buyers are willing to pay the premium in order to maintain an emergency source of supply.

STRUCTURAL SHAPES . . .

STRUCTURAL STEEL PLACED

1,000 tons, power plant, Consolidated Gas Electric Light & Power Co., Baltimore, to Belmont Iron Works, Eddystone, Pa.

970 tons, Medical Center buildings, Camp Dietrick, Md., noted Jan. 19 issue as going to unnamed fabricator, went to Klein Iron Works, Long Island City, N. Y.

925 tons, maintenance-traffic depot and laboratory, State Department of Public Works, route 9, Wellesley, Mass., to American Bridge Division, United States Steel Corp., Pittsburgh; Canter Construction Co., Boston, general contractor.

600 tons, grandstand addition, Garden State race track, Camden, N. J., to Belmont Iron Works, Eddystone, Pa.

525 tons, dormitories, Holy Cross College, Worcester, Mass., to A. O. Wilson Structural Co., Cambridge, Mass.; Walsh Bros., Cambridge, general contractor; reinforcing bars to Tucker & Fox, Boston.

300 tons, substation steel for Bonneville Power Administration, to Emsco Mfg. Co., Los Angeles.

240 tons, First National Bank, Philadelphia, to American Bridge Division, United States Steel Corp., Pittsburgh.

STRUCTURAL STEEL PENDING

2500 tons, state bridge, over Potomac river, Brunswick, Md., American Bridge Division, United States Steel Corp., Pittsburgh, low bidder.

2100 tons, hangars, air base, Limestone, Me., Luria Engineering & Trading Co., Boston, low.

1200 tons, one-story plant building, Tube Reducing Corp., Wallington, N. J., bids asked.

900 tons, high school, Siegersville, Pa., bid closed.

800 tons, Washington state Steamboat Slough swing span bridge, near Everett, bids to Olympia Feb. 10.

750 tons, alert hangars, Smoky Hill Airfield base, Salina, Kans., bids to Corps of Engineers, Kansas City, Mo., Feb. 3.

600 tons, grandstand addition, Laurel race track, Maryland, contemplated.

550 tons, alert hangars and shops, Truax Airfield base, Madison, Wis., bids to Corps of Engineers, Milwaukee.

500 tons, tank building, Simplex Wire & Cable Co., Newington, N. H.; this in addition to 650 tons, new building, placed with Bancroft & Martin Rolling Mills Co., South Portland, Me. (STEEL, Jan. 12).

500 tons, Washington state Rainier avenue overpass, Seattle, Dahlgren Construction Co., Seattle, low, $1,218,667.

425 tons, state highway bridges, Bridgewater-Raynham, Mass., bids Feb. 3, Boston.

Unstated tonnage, state thruway work, Greene and Montgomery counties, New York, bids Feb. 11; also on that date another section of the Major Deegan Expressway in the Bronx, N. Y.

REINFORCING BARS . . .

REINFORCING BARS PLACED

450 tons, King county hospital addition, Seattle, to Bethlehem Pacific Coast Steel Corp., Seattle; J. C. Boespflug Construction Co., Seattle, general contractor.

400 tons, auto maintenance facilities, Ladd Field, Alaska, to Bethlehem Pacific Coast Steel Corp., Seattle; Boen-Sealand Co., Seattle, general contractor.

100 tons, local church and other projects, to Northwest Steel Rolling Mills Inc., Seattle.

REINFORCING BARS PENDING

540 tons, Washington state Rainier avenue viaduct, Seattle; general contract awarded.

290 tons—five state bridges, Amesbury-Salisbury, Mass., bids Feb. 3, Boston.

185 tons, four reinforced concrete rigid-frame bridges, Mid-Cape highway, Bourne-Sandwich-Barnstable, Mass., bids Jan. 27, Boston.

150 tons, Washington state highway bridge near Everett, bids to Olympia Feb. 10.

PLATES . . .

PLATES PENDING

500 tons, fo tanks, Simplex Wire & Cable Co., Newington, N. H.

PIPE . . .

CAST IRON PIPE PENDING

2500 tons, 16, 12 and 10 in., 6250 ft cast iron; also 9000 ft 16, 6 and 8 in. steel water pipe, hydrants, valves, etc., bids to Vancouver, Wash., Jan. 26.

STEEL PIPE PENDING

700 tons, 30-inch steel pipe, Newton, Mass., bids Feb. 5, Metropolitan District Commission, Boston.

RAILS, CARS . . .

LOCOMOTIVES PLACED

Denver & Rio Grande Western, five 1,000 hp diesel road-switching units, to Electro-Motive Division, General Motors Corp., La Grange, Ill.

RAILROAD CARS PLACED

Central of Georgia, fifty 70-ton covered hopper cars, to Pullman-Standard Car Mfg. Co., Chicago.

Denver & Rio Grande Western, 200 seventy-ton drop-bottom gondolas to General American Transportation Co., Chicago.

Great Northern, 200 fifty-ton flat cars, to Pacific Car & Foundry Co., Renton, Wash.

Gulf, Mobile & Ohio, 50 seventy-ton covered hopper cars, to Pullman-Standard Car Mfg. Co., Chicago.

"READING" CRANE'S accurate spotting speeds handling of heavy loads...

To reduce handling costs and improve production, a fast, efficient 5-ton "Reading" electric crane replaced the slow-moving hoist formerly installed in the plant pictured here. This "Reading" double I-beam, floor-operated crane has a traveling speed of 150 feet per minute—and a 22' lift.

Used to lower heavy domes on their heat treating furnaces, the new crane turns a tedious, costly handling job into a swift "push-button" operation. Worker fatigue is lessened. Shutdown time is reduced. Load handling costs are cut to the bone.

Find out how "Reading" Electric Cranes are "job-tailored" to fit your requirements at no extra cost. Write for our latest 16-page bulletin, "The *Why* and *How* of Faster Production".

READING CRANE & HOIST CORP. • 2102 ADAMS STREET, READING, PA.

Chain Hoists
Electric Hoists
Overhead
Traveling
Cranes

READING CRANES

The New Prutton Model 300 Rollmaster

External Rolled Threads in
½"-13 Hollow Set Screws

First Machine for High-Speed, Low-Cost External Thread Rolling In Hollow Work

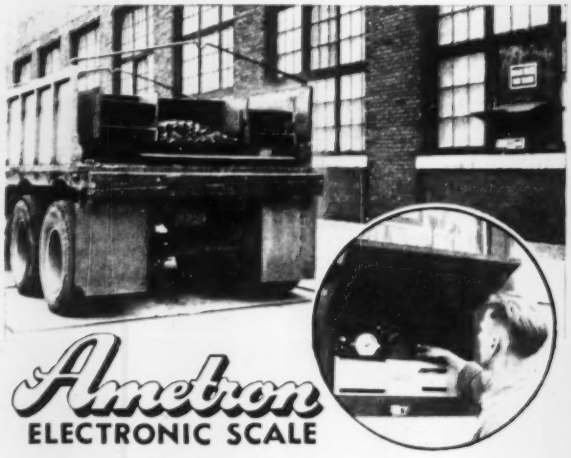
- ★ WORLD'S FASTEST, LOWEST COST—Speeds output many times. Saves manhours, floor space.
- ★ VERSATILE—hollow or solid work, wide range of metals, many sizes.
- ★ CLASS 3 FIT—"Cold forged" quality, superior to cutting or grinding.
- ★ DIES LAST LONGER—Full 30 inches mean less wear, longer die life, more pieces per die.

U. S. Pat. Applied For

Rolls in Bigger Profits, Obsoletes All Other Types

Revolutionizing the industry! Exclusive Prutton "planetary" die principle — proven up to 10 times faster than other methods. Does thread rolling, roll forming, knurling, marking, serrating, necking of bolts, screws (hollow set screws and all types) and special parts—both hollow and solid. Ask for Bulletin 302

D. H. Prutton MACHINERY CO.
5295 WEST 130TH STREET
CLEVELAND 11, OHIO



Ametron ELECTRONIC SCALE

REDUCE INSTALLATION, OPERATING AND MAINTENANCE COSTS!

This typical electronic scale installation shows how industry is switching to electronics for heavy weighing. Sturdy, compact load cells—with huge weight capacities—do the job! The Ametron Recorder (which can be remotely located) automatically prints the exact weight on tape, tickets or ledger cards.

Direct slips, board ticket into recorder to print exact weight

Write for free Ametron Brochure C

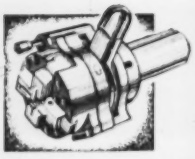
Branches in Pittsburgh and Allentown, Pa. and Birmingham, Ala.

THE STANDARD OF ACCURACY SINCE 1888
STREETER-AMET COMPANY
4101 RAVENSWOOD AVENUE • CHICAGO 13, ILLINOIS

HOT DIP
GALVANIZING
SOUTHERN GALVANIZING CO.
BUSH STREET AND S. LOMBARD, BALTIMORE, MD.
Ideally located for export
LOW RAIL AND WATER RATES, EAST AND WEST

To Lower your Overhead..
BROWNING ELECTRIC TRAVELING CRANES AND HOISTS
up to 125 TON CAPACITY
VICTOR R. BROWNING & CO., INC. WILLOUGHBY (Cleveland), OHIO

H&G Insert Chaser DIE HEADS



famous for accuracy and straightness of threads. Low chaser costs. Less downtime. More pieces per day.

THE EASTERN MACHINE SCREW CORP., 22-42 Barclay Street, New Haven, Conn.
Pacific Coast Representative: A. C. Berbringer, 531 N. San Pedro St., Los Angeles, California. Canada: F. E. Barber Machinery Co., Toronto, Canada.

THEORY AND PRACTICE OF ROLLING STEEL . . By Wilhelm Tafel

312 Pages
Price Postpaid
$4.50

Covers every angle of the design, construction and operation of the steel rolling mill.

THE PENTON PUBLISHING CO.
Book Department, 1213 W. 3rd St., Cleveland 13, O.

COPPER—BRASS—BRONZE
PERFORATED
TO YOUR REQUIREMENTS
PERFORATED METALS
FOR ALL INDUSTRIAL USES
SEND FOR CATALOG No. 35
ARCHITECTURAL GRILLES
DIAMOND MFG. CO.
Box 32 WYOMING, PA

The **Cleveland Steel Tool Co.**
• PUNCHES • DIES • CHISELS • RIVET SETS •
IF IT'S *RIVETED* YOU KNOW IT'S SAFE
•
WE FEATURE SPECIAL PUNCHES & DIES
660 E. 82nd ST., CLEVELAND, O.

OHIO LOCOMOTIVE CRANES

25 TO 50 TON CAPACITY
DIESEL • GASOLINE • ELECTRIC • STEAM
THE OHIO LOCOMOTIVE CRANE CO.
BUCYRUS, OHIO

Here and There in Metalworking . . .

CONSTRUCTION—ENTERPRISE—ORGANIZATIONAL CHANGES

GE To Make Tubes in Scranton

The Scranton, Pa., plant of General Electric Co. now is known as the Scranton tube plant with management responsibility transferred from the electric sink and cabinet department to the tube department. N. J. Corwin is plant manager. Dishwasher manufacturing operations of the plant are being transferred to Louisville, Ky., and the Scranton plant is being converted to tube production.

National Lead Building Plant

National Lead Co., New York, is building a plant at Edson, Kans., for the production of Lorite, a diatomaceous material used as an extender pigment.

Western Machinery Buys Firm

Western Machinery Co., San Francisco, acquired Smith Booth Usher Co., Los Angeles, distributor of construction equipment. It will be operated under its own name as a division of Western Machinery.

Industrial Resin Sales Gain

Plastics Division, Monsanto Chemical Co., Springfield, Mass., reorganized its sales department to keep pace with the rapidly expanding markets for industrial resins. Edmond S. Bauer Jr. was appointed sales manager of industrial resins and heads a newly created section of the sales department.

Buffalo Forge Retools Factory

Buffalo Forge Co., Buffalo, is retooling much of its factory to produce "at prices based on high productivity," says Henry W. Wendt, chairman of the board. He reported demand is increasing for the company's production of industrial air cleaning and air conditioning equipment and a plant addition is now nearing completion.

Instrument Firm Changes Name

Graham-Mintel Instrument Co., Cleveland, changed its corporate name to Cleveland Instrument Co. Inc.

Universal Sheet Opens Warehouse

Universal Sheet & Strip Steel Co. opened its $1 million warehouse and office building at 4900 S. California, Chicago. The firm is an outgrowth of National Sheet Steel Co., founded in 1939. Sol Fox is president.

White Motor Moves Sterling Plant

Operations of Sterling Division, White Motor Co., are being transferred from Milwaukee to Cleveland. Sterling, producer of heavy duty special trucks, was acquired by White Motor last year.

Screw Products Firm Expands

Michigan Screw Products Co., Detroit, is building a factory and office building at 11 Mile road and Sherwood, Warren township, Michigan. When in full operation, the company's capacity will exceed 10 million fasteners per month.

Chicago Detinning Co. Organized

A new detinning company, Chicago Detinning Co. Inc., was organized to operate a plant at 1500 W. Webster Ave., Chicago. Products of the operations are pig tin and hydraulically compressed detinned sheet steel scrap. Owners of the company conducted detinning operations for three years in Batavia, Ill., under the firm name of Batavia Detinning Co. Officers are: J. Sandman, president; W. G. Midnight, vice

QUANTITY PRODUCTION OF GREY IRON CASTINGS

ONE OF THE NATION'S LARGEST AND MOST MODERN PRODUCTION FOUNDRIES

ESTABLISHED 1866

THE WHELAND COMPANY

CHATTANOOGA 2, TENN.

CHEMSTEEL CONSTRUCTION COMPANY, INC.

203 Chemsteel Bldg., Walnut St., Pittsburgh 32, Pa.

(No "tie-in" with any manufacturer)

Send data on your Design, Engineering & Construction Facilities for erection of

ACID-ALKALI-PROOF TANKS & FLOORING

NAME.....

COMPANY.....

ADDRESS.....

CITY.....ZONE..STATE...

TOLEDO STAMPINGS

Let us make your stamping problems our problems. Our Engineering Department has had many years of experience in development work and our production facilities include not only a modern press department, but facilities for copper hydrogen brazing and other types of welding and assembling work. We solicit your prints and inquiries.

Toledo Stamping and Manufacturing Co.

90 Fearing Blvd., Toledo, Ohio
Detroit Office: 12800 Puritan Ave., Detroit 27, Mich.
Chicago Office: 333 North Michigan Ave., Chicago, Ill.

LAYOUT FLUID

FOR ANY METAL

Scribed lines are easy to see against the dark blue background. Speeds up layout work and cuts costs. Merely wipe surface clean and brush on layout fluid. *Dries instantly.* Write on your company letterhead for free sample. Advise us if your local supply house doesn't carry.

WRITE FOR FREE SAMPLE

DAYTON ROGERS Manufacturing Company

2832 12th Ave. So.
MINNEAPOLIS 7
MINNESOTA

Life for Old Wheels

Tank roadwheels and tracks, once worn beyond repair, now are being built up for resurfacing by a rapid welding and machining process that is expected to bring savings of $27 million and save 28,000 tons of steel in a national emergency

president and general manager; H. L. Sandman, secretary; and L. L. Sandman, treasurer.

Motorola Forms Subsidiary

Motorola Communications & Electronics Inc. was organized as a wholly-owned subsidiary of Motorola Inc., Chicago. The new company will distribute products manufactured by the Communications & Electronics Division of the parent corporation. Motorola Inc. is building a $3 million plant in Franklin Park, Ill., that will nearly double the firm's television manufacturing facilities.

Consolidated Vacuum Expands

Consolidated Engineering Corp., Pasadena, Calif., completed the formal acquisition of the vacuum equipment department of Eastman Kodak's Distillation Products Industries, Rochester, N. Y. The facilities will be operated under the name of Consolidated Vacuum Corp., a wholly owned subsidiary of consolidated Engineering.

Utica Radiator Buys Foundry

Utica Radiator Corp., Utica, N. Y., purchased all equipment in International Heater Co.'s foundry and has leased all the buildings in the area for five years, with an option to buy. The deal will change neither operations nor employment of International Heater. Utica Radiator will transfer its entire foundry operations to the newly acquired buildings which include a fully mechanized cast iron foundry.

Engineering Firm Moves Offices

Harold F. Howard Co., industrial and management engineering firm, moved to larger quarters at 319 Fisher Bldg., Detroit 2.

Appliance Maker Opens Offices

Mine Safety Appliances Co., Pittsburgh, established district offices at Uniontown, Pa., and at Johnstown, Pa. District managers are H. R. Johnson and V. A. Stanton at the respective offices.

Mangaslag To Build Pilot Plant

Mangaslag Inc. proposes to construct and operate a $1 million pilot plant at Pittston, Pa., to engage in experimental processes involving the extraction of ferromanganese and various other chemicals and metals from steel slag.

San-Equip Inc. Enlarging Plant

Luria Engineering Co., Bethlehem, Pa., is erecting an addition to the factory of San-Equip Inc., manufacturer of septic tank systems, sanitation solvents and gasoline storage tanks, Syracuse, N. Y.

Dodge Expands Facilities in West

Dodge Division, Chrysler Corp., Detroit, awarded contracts for construction of an addition to its assembly plant in San Leandro, Calif. New conveyors will be installed and present assembly lines will be rearranged for more efficient straight line operations. The company is installing paint spray booths, ovens, body assembly fixtures, and other equipment in a

WORLD'S LARGEST INVENTORY

FREE CATALOG

MOTORS-GENERATORS-TRANSFORMERS
New and Guaranteed Rebuilt
1 H.P. to 2500 H.P.

ELECTRIC EQUIPMENT CO.
P. O. BOX 51, ROCHESTER 1, N.Y.

transformers
built to your specifications

Take advantage of our more than 40 years' experience in manufacturing and re-building industrial transformers. Complete satisfaction guaranteed.

Send us your specifications for prompt quotation

"TRANSFORMER HEADQUARTERS"
Manufactured - Bought - Sold - Repaired

THE ELECTRIC SERVICE CO., INC.
5315 Hetzel St., Cincinnati 27, Ohio

CIMCO SELECT MACHINE TOOLS GUARANTEED

Bullard 42" Vertical Boring Mill, late type, 4 jaw chuck, table
Niles 36-44 Vertical Boring Mill
King 42" Vertical Boring Mill, 2 heads
Niles 42"-56" Driving Box Borer, Burnisher and Facer, late type
Brown & Sharpe #2 Vertical Miller
Cincinnati #3 Hi-Power Vertical Miller
Hall Planetary Style D Miller
Gould & Eberhardt 96 H Hobber
Heald #36 Internal Grinder
Sellers 4T Tool Grinder, motor drive
Sellers 6T Tool Grinder, late type
Landis 16 x 72 Plain Cylindrical Grinder
Brown & Sharpe #12 Plain Grinder, reversing mechanism
Heald #70A Internal Grinder
Heald #78 Centerless (Internal & Cylindrical) Grinder, late type, complete
Heald 12 Borematic
Jones & Lamson 8 x 31 Thread Grinder
Heald 72-A3 Plain Internal Grinder
Lodge & Shipley 16" x 6' single pulley drive, 12 spindle speeds
American 16" x 8' - 3 SCD, 56" center distance, 1¼" hole in spindle
Mount Model H-3 Special Application Lathe for Turning 26" swing, 2½" hole in spindle, 54" centers
Lodge & Shipley 20 x 8' single pulley drive, 12 spindle speeds
Bradford 20" x 18', 4 SCD, 12' center distance, Loose change
Gould & Eberhardt 16" Back Geared Shaper
Gould & Eberhardt 24" Back Geared Shaper
Gould & Eberhardt 28" Shaper, gear box
Smith & Mills 32" Shaper, gear box
Fellows 725 Gear Shaper with Spur Guide
Fellows 612 Spur Gear Shaper
Brown & Sharpe 3-26 Gear Cutter
Oliver Template Tool Bit Grinder
Lodge & Shipley 16" x 126" centers, G.H. Lathe, Timken bearing, complete with taper attachment, late type
Niles 48" x 48" x 16' Double Housing Planer, 4 heads, box table, 10 reversible drive
Landis 26" x 168" Plain Cylindrical Grinder
American 36" x 14' G.H. Lathe, 12 speed
Monarch 24" x 12' G.H. Lathe, complete with 22" 4 jaw chuck and taper attachment
American 36" x 40' Lathe, Internal Face Plate Drive, with 4" raising blocks, 33" center distance
Bliss #58 Drawing Press, 5" stroke
Gorton 3S Pantograph, late type
Pond 84 x 84 x 16' Double Housing Planer, 10 motor drive, 4 heads
Cincinnati #2 Centerless Grinder
Cincinnati-Bickford 41" column Radial drill, gear box on base
Cincinnati-Bickford 3½' Radial Drill
Hanchett No. 600-36" UK Traveling Wheel Face Grinder, new 1946, table 72" x 36" long, 100 HP grinding wheel motor
Baker #217 Upright Drill Press
Gisholt H, Saddle Type Turret Lathe with bar feed, late type

GUARANTEED MACHINERY

Cincinnati Machinery Company Incorporated
207 E SECOND STREET
CINCINNATI 2, OHIO

OPEN TIME
300 TON PRESS BRAKE
Will bend 20' x ¼" to 6' x ¾" Pl.
ST. JOSEPH STRUCTURAL STEEL CO.
Box 68 Sta. "A" St. Joseph, Mo.

FOR CLASSIFIED RATES
And Further information write
STEEL, Penton Bldg., Cleveland 13, O.

RAILROAD EQUIPMENT—*FOR SALE*

USED **AS IS** **RECONDITIONED**

STANDARD GAUGE FREIGHT CARS

Box, Double Sheathed, 50-Ton Capacity
Box, Single Sheathed, 50-Ton
Tank, 3,000-Gallon, High Pressure
Tank, 8,000-Gallon, Coiled and Non-Coiled
Gondolas, Composite, or All Steel 50-Ton and 70-Ton
Hoppers, Covered, All-Steel, 70-Ton
Hoppers, Twin, All-Steel, 50-Ton, Cross Dump
Hoppers, All-Steel, 70-Ton, Cross Dump

EXTRA LONG FLAT CARS

40 & 50-Ton Capacity, Length 70' and 74'

CABOOSE CARS

Eight Wheel, Cupola Type

STANDARD GAUGE AIR DUMP CARS

Side Dump, 20-Yd., 40-Ton, Lift Door
End Dump, 20-Yd., 50-Ton Drop Door
Side Dump, 30-YD., 50-TON, DROP DOOR

OTHER EQUIPMENT

Locomotive Cranes
Overhead Cranes
Railroad Track Scales

STANDARD GAUGE DIESEL-ELECTRIC ROAD SWITCHING LOCOMOTIVE

1500 H.P., 120-Ton, Type 0-4-4-0

Send us your inquiries **WE BUY FREIGHT CARS FOR DISMANTLING** ***Send us your offerings***

IRON & STEEL PRODUCTS, INC.

REPAIR PARTS For All Types of Freight Cars

General Office
13462 S. Brainard Ave.
Chicago 33, Illinois
Phone: BAyport 1-3456

New York Office
50-D. Church Street
New York 7, N. Y.
Phone: BEekman 3-8230

STORAGE TANKS
6,000 Gallon
8,000 Gallon
10,000 Gallon

"ANYTHING containing IRON or STEEL"

CLASSIFIED ADVERTISING

Positions Wanted

YOUNG EXECUTIVE PRESENTLY EMPLOYED AS PLANT SUPERINTENDENT OF A NON-FERROUS ROLLING MILL DESIRES CONNECTION WITH A PROGRESSIVE BASIC OR MANUFACTURING COMPANY. METALLURGICAL ENGINEERING BACKGROUND. EXPERIENCED IN ALL PHASES OF SUPERVISORY MANAGEMENT. WRITE BOX 647, STEEL, PENTON BLDG., CLEVELAND 13, OHIO.

PLANT MANAGER: M.I.T. GRADUATE WITH 25 years' experience in Plant Management, including Production planning, machine and plant loading, Material and tool control, quality control, purchasing, incentives, standard costs, variable budgets, overhead analysis and break-even charts, job evaluation, supervisory responsibility chart and labor relations. Capable administrator with excellent record. Write Box 632, STEEL, Penton Bldg., Cleveland 13, Ohio.

PLANT MANAGER 15 years' experience in Plant Management, Production Control, Accounting Problems, Manufacturing Development, etc. Sm'l manufacturing plant preferred. Could invest. Age 45, married, family. Write Box 650, STEEL, Penton Bldg., Cleveland 13, Ohio.

Accounts Wanted

SALES AGENT

Pittsburgh headquarters, traveling Eastern Ohio, West Virginia and Western Pennsylvania, desires line, sold to industrials, prefer items for atomic energy or armaments. Commission basis. Write Box 645, STEEL, Penton Bldg., Cleveland 13, Ohio.

Help Wanted

SHOP SUPERINTENDENT

For Structural Steel and Miscellaneous Iron Shop located in the South. Excellent opportunity for a man experienced in supervising steel fabrication for buildings. Submit complete information relative to past experience, age, qualifications, and salary expected in first reply. Address Box 649, STEEL, Penton Bldg., Cleveland 13, Ohio.

STEEL SALESMAN: BAR MILL PRODUCTS. Territory Atlantic seaboard principally, southeastern States. Salary and expenses with added incentive compensation. Reply complete resume stating salary expected. Write Box 643, STEEL, Penton Bldg., Cleveland 13, Ohio.

Help Wanted

DEPARTMENT FOREMAN — Stainless Steel Sheet Fabrication. Well established manufacturer of sheet metal products entering new field of stainless steel fabrication needs strong departmental foreman with broad experience in stainless steel. Medium sized midwestern town. Attractive starting salary with excellent advancement for right man. Write details of experience, salary progression and current salary requirements. Replies strictly confidential. Write Box 646, STEEL, Penton Bldg., Cleveland 13, Ohio.

SALES REPRESENTATIVE WITH SOME ENGINEERING BACKGROUND AND FAMILIAR WITH STRUCTURAL STEEL FABRICATING AND ALLIED INDUSTRIES FOR MID-WEST TERRITORY. SALARY, EXPENSES AND COMMISSION. GIVE FULL INFORMATION—AGE AND QUALIFICATIONS. CORRESPONDENCE CONFIDENTIAL. WRITE BOX 625, STEEL, PENTON BLDG., CLEVELAND 13, OHIO.

ROLLING MILL SUPERINTENDENT

New, rapidly expanding steel mill now in operation ready to fill position of Rolling Mill Superintendent. Electric furnace, thirty ton capacity, producing carbon and alloy grades. 18" and 10" rolling mills (9 stands designed for further expansion). Require top grade full operational experience in rolling and conditioning all grades. Must know equipment, roll design and roll shop. Salary with production incentive open, consistent with experience and ability. This is top position with exceptional future. Age limit 50 years. Answer with full details of experience and references. Include personal photograph.

Frank V. Seidelhuber, *President*
SEIDELHUBER STEEL ROLLING MILL CORP.
5280 West Marginal Way
Seattle 6, Washington

FOR SALE

PIPE CLEANER

Cleans 2" to 36" inclusive. American Wheelabrator. The latest and most unique of centrifugal blast cleaners for pipe. This machine can be purchased at a reasonable price complete with all detachments, and can be seen in operation in Centralia, Ill. Cleans any degree of dirty or rusty pipe like new. This machine was new in 1951 and used very little.

For further information contact Frank Corgiat or Frank Tye.

VALLEY STEEL PRODUCTS COMPANY
124 Sidney St. St. Louis 4, Mo.
Phone: Laclede 2100

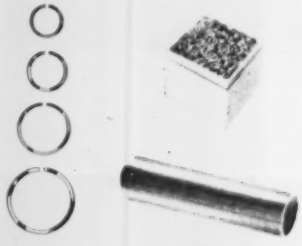
FOR SALE
20,000 lbs. of #413
STAINLESS STEEL BILLETS
4" x 4" x 6' Aircraft quality
For remelt
KOLCAST INDUSTRIES, INC.
16601 Euclid Avenue Cleveland, Ohio

For Sale
Controlled Atmosphere Furnace
BRIGHT ANNEALING & COPPER BRAZING
Max. Temp. 2100° F. General Electric 50 KW. Converted to Continuous Belt Type. Price $9000.00
TECHNICAL METAL PROCESSING, INC.
Cleveland 14, Ohio UTah 1-6677

Belgian metalworking Company seeks licensing agreement to manufacture in Belgium parts of **Steel Sheet Products**
Its modern equipment of shears, presses, welding machines, etc. is adapted to all sheet and platework up to ¾ inch thick. Excellent selling organization covering Western Europe. Write to:
LEON G. RECQUOI
Representative of Belgian Federation of Metalworking Industries, 30 Rockefeller Plaza, New York 20, N. Y.

ORDNANCE CONTRACTORS! READ THIS!

If your shell, rocket or Burster job specifies brazing with Silver Alloy Rings, it will pay you to contact the one manufacturer who completes the job — and at minimum costs.



Alloying to certified Govt. Specifications, rolling, wire drawing and ring forming to your Blue Print tolerances — all these processes performed in one UNITED WIRE mill! Meaning . . . one control — of alloy composition, of precise ring dimensions, of shipping schedules! And . . .

A competent and experienced staff of brazing specialists, with their completely modern laboratory, is anxious to work with you.

If you have any silver alloy brazing problems, why not turn them over to

United WIRE

PRODUCERS OF:
★ SIL-BOND 50 Govt. Grade IV
★ SIL-BOND 45 Govt. Grade VII
★ SIL-BOND 35 Govt. Grade VIII
★ SIL-FLUX Govt. 4-1121

Contact your nearest UNITED WIRE Welding Supply distributor or write our necrest office.

UNITED WIRE
& SUPPLY CORPORATION
PROVIDENCE, RHODE ISLAND
SALES OFFICES
New York Chicago Akron Philadelphia
Rochester Lansing, Mich. Los Angeles
Minneapolis Pittsburgh Springfield, Mass.
Hartford, Conn.

building recently constructed adjacent to the assembly plant. In the same building, the company will also manufacture aircraft propellers for the Navy and Air Force.

Midcontinent Tube Service Moves

Midcontinent Tube Service Inc., jobbers and distributors of steel pipe and tubing, now occupy new offices and warehouse at 2308 Oakton St., Evanston, Ill.

Newcomer Products Makes Change

Newcomer Products Inc., Latrobe, Pa., is servicing its mining tool customers directly instead of through jobbers and suppliers.

Rolled Alloys Inc. Organized

Rolled Alloys Inc. was organized to continue the development of heat and corrosion resistant alloys previously carried on by Rolled Products Division, Michigan Steel Casting Co., Detroit. The alloys developed are used between temperatures of 1200 F and 2350 F. All of the personnel formerly associated with Rolled Products Division are now with Rolled Alloys Inc., 4815 Bellevue Ave., Detroit. Paul Goetcheus is president.

Forker Names Representative

Forker Corp., Cleveland, manufacturer of Ohio tramrail systems, appointed Stryco Mfg. Co., San Francisco, as its representative.

Powdered Metal Products Expands

Powdered Metal Products Corp. of America, Franklin Park, Ill., is building a plant addition. The project will expand production facilities by 40 per cent. The addition will house new furnaces.

Chrysler Finances Research Program

Chrysler Corp., Detroit, is financing a $250,000 engineering research program at the University of Michigan, Ann Arbor, Mich. The program is part of the Michigan Memorial-Phoenix project which is a broad investigative enterprise designed to enhance the university's ability to contribute to human welfare in the atomic age. The research program will include a study of the use of radioactive tracers in measuring the wear of various materials, as well as the use of radio-isotopes in determining the atomic structure of materials.

Frasse Erects Warehouse

Peter A. Frasse & Co. Inc., New York, is erecting an office and warehouse building in North Tonawanda, N. Y. The building will permit consolidation of the entire Frasse Buffalo operation under one roof, and will be devoted to the distribution of alloy, stainless and cold-finished carbon steels and tubing. Leslie N. Stetson is district manager.

Dietz Acquires Embury Mfg. Co.

R. E. Dietz Co., Syracuse, N. Y., completed arrangements to acquire the fixed assets and inventory of the Embury Mfg. Co., Warsaw, N. Y. Embury, a producer of lanterns, is going out of business. The manufacturing of the consolidated Dietz and Embury lines will be handled entirely at the Syracuse plant.

McGraw To Build Parts Plant

F. H. McGraw & Co., New York, received a contract to build a $1,250,000 aircraft parts plant in Newington, Conn., for Fenn Mfg. Co., Hartford, Conn. The plant will manufacture rotor heads and transmissions which will be installed in helicopters.

Tool Firm Completes Project

Chicago Pneumatic Tool Co., Chicago, completed construction of a plant at Ft. Worth, Tex., for the manufacture of oil well drilling equipment. The plant cost about $4.5 million to construct and equip.

Friedman Heads Extruders Group

Aluminum Extruders Council, Washington, formulated its program for 1953 and elected these officers: President, Leon S. Friedman, National Aluminum Co., Columbus, O.; vice president, John Doering, J. S. Thorn Co., Philadelphia; secretary, Robert Katz, Badger Aluminum Extrusions, Brooklyn, N. Y.; treasurer, Isidore Himmel, Himmel Bros. Co., Hamden, Conn.

Pennsalt Appoints Agents

Pennsylvania Salt Mfg. Co., Philadelphia, appointed Henry S. Rondeau and the Cleveland Industries Co., Cleveland, as representatives for its corrosion engineering products in Ohio and northern Kentucky.

Vanadium-Alloys Buys Plant

Vanadium-Alloys Steel Co., Latrobe, Pa., purchased the London, Ont., plant, formerly owned by Quality Steels Ltd. Acquisition of the facilities completes another phase of Vanadium-Alloys' planned expansion program in the Canadian market. The company recently purchased Murray Steels Ltd., Toronto, Ont., and is operating the firm under the name of Vanadium-Alloys Steel, Canada, Ltd. Jean Paul Elkann, vice president and director of the parent company, will

serve as president and chief executive officer of the Canadian company. R. J. Murray, president of Murray Steels, was appointed vice president in charge of sales. Renovation of facilities and installation of new equipment is progressing rapidly. Manufacture of high quality tool and specialty steels is expected to begin within six months.

Bethlehem Steel To Erect Building

Bethlehem Steel Co. will erect an office building in Johnstown, Pa., with work to begin in the spring. Completion of the building will mark a major milestone in Bethlehem's $60 million modernization and improvement project at Johnstown.

Thor-Canadian Completes Project

Thor-Canadian Co., Toronto, Ont., completed additional facilities to start production of pilot ejector seats.

Carboloy Appoints Distributor

Carboloy Department, General Electric Co., Detroit, appointed Dayton Supply & Tool Co. Inc., Dayton, O., as a distributor of its standard tools and blanks, masonry drills and diamond wheel dressers.

Glidden Buys Paint Plant

Glidden Co., Cleveland, purchased the Eagle-Picher paint plant in Atlanta and plans to double its capacity. Glidden also purchased a tract of adjoining land for construction of an office building and finished stock warehouse. The plant superintendent is Walter S. Herner while the laboratory is headed by Harold G. Hayward.

AAMI Opens Membership

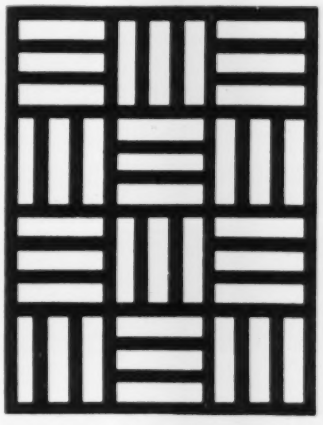
American Association of Machinery Importers announces a new category of membership an associate membership open to firms interested in taking a part in organizational affairs, but without voting privileges. These memberships are expected to go to insurance agencies, forwarding firms, shipping agents, custom brokers, milling agents and others.

Scrap Dealers Elect Officers

Officers of the Northwest Chapter, Institute of Scrap Iron & Steel Inc., for 1953 are: S. David Greenberg, Phillip Greenberg & Co., St. Paul, president; Bud Davis, West End Iron & Metal Co., Duluth, first vice president; Fred Isaacs, American Iron & Supply, Minneapolis, second vice president; Martin Bush, Martin Bush Iron & Metal Co., Minneapolis, secretary; Reuben Kaplan, H. S. Kaplan Scrap Iron & Metal Co., St. Paul, treasurer.

Hendrick Ornametal

TRADE MARK



Hendrick Ornametal—a decorative, lightweight metal grille designed for a wide variety of applications — is furnished in many attractive designs, the one illustrated being "Baskette."

Ornametal is made of a special bright finish, cold rolled steel, suitable for painting or plating, and is available in a broad range of stock size sheets and gauges.

Write for illustrated folder.

SEE OUR CATALOG IN SWEET'S

HENDRICK

Manufacturing Company

Perforated Metals
Perforated Metal Screens
Wedge-Slot Screens
Architectural Grilles
Mitco Open Steel Flooring
Shur-Site Treads, Armorgrids

30 DUNDAFF STREET, CARBONDALE, PENNA.

Sales Offices In Principal Cities

"New Process"

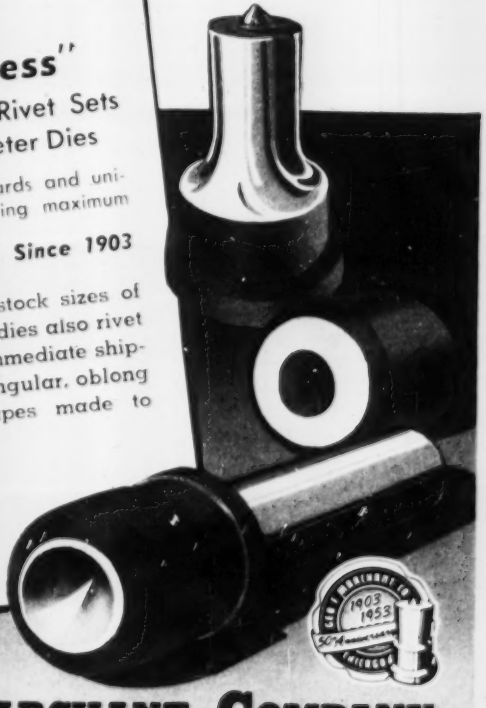
Punches • Dies • Rivet Sets
Compression Riveter Dies

Made of highest standards and uniform quality thus insuring maximum service.

Since 1903

Large inventory of stock sizes of round punches and dies also rivet sets available for immediate shipment. Square, rectangular, oblong and elliptical shapes made to order.

Write Dept. A for Catalog 46



GEO. F. MARCHANT COMPANY

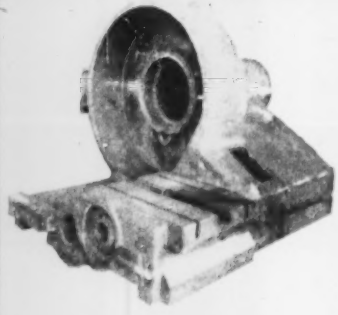
1420-34 So. ROCKWELL STREET • CHICAGO 8, ILLINOIS

Hyde Park

RED CIRCLE Rolls ALLOY-CHILLED

Gray Iron Castings

Castings of any size up to 80,000 pounds. Hyde Park facilities are equal to your every requirement



Machine Castings
Lathe Beds
Housings
Pinion Housings
Mill Housings
Shoe Plates
Layout Plates
Surface Plates

Hyde Park

FOUNDRY & MACHINE CO.
Hyde Park, Westmoreland County, Pa.
ROLLS
ROLLING MILL MACHINERY
GREY IRON CASTINGS

Advertising Index

Accurate Perforating Co. 128
Alliance Machine Co., The 96
American Bridge Division, United States Steel Corporation 23
American Broach & Machine Co., A Division of Sundstrand Machine Tool Co. 86
Applied Research Laboratories 125
Armco Steel Corporation 32
Associated Spring Corporation 83

Barium Steel Corporation 2
Barnes-Gibson-Raymond, Division of Associated Spring Corporation 83
Barnes, Wallace, Co., Division of Associated Spring Corporation 83
Barnes, Wallace, Co., Ltd., The, Division of Associated Spring Corporation 83
Bethlehem Steel Co. 1
B-G-R Cook Plant, Division of Associated Spring Corporation 83
Browning, Victor R., & Co., Inc. 130
Bullard Co., The 50

Carpenter Steel Co., The 89
Champion Rivet Co., The 124
Chemsteel Construction Co., Inc. 131
Cincinnati Machinery Co., Inc. 132
Cincinnati Milling Machine Co., The 63
Clark Controller Co., The 73
Cleveland Steel Tool Co., The 130
Cleveland Worm & Gear Co., The Inside Back Cover
Cold Metal Products Co., The 77
Columbia Steel & Shafting Co., Summerill Tubing Company Division 99
Copperweld Steel Co. 53
Crucible Steel Company of America 24, 25, 123
Cutler-Hammer, Inc. Back Cover

Denison Engineering Co., The 7
Diamond Mfg. Co. 130
Dracco Corporation 14
Dunbar Brothers Co., Division of Associated Spring Corporation 83

Eastern Machine Screw Corp., The 130
Eaton Manufacturing Co., Reliance Division 64
Elastic Stop Nut Corporation of America 75
Electric Controller & Mfg. Co., The Inside Front Cover
Electric Equipment Co. 132
Electric Service Co., Inc., The 132

Federal Fawick Corporation, Fawick Airflex Division 61
Firestone Steel Products Co. 35

Gibson, William D., Co., The, Division of Associated Spring Corporation 83
Gisholt Machine Co. 26
Goodyear Tire & Rubber Co., Inc., The 4
Gorham Tool Co. 12

Hendrick Manufacturing Co. 135
Hobart Brothers Co. 9
Hyde Park Foundry & Machine Co. 136

Iron & Steel Products, Inc. 133

Joliet Wrought Washer Co. 124
Jones & Laughlin Steel Corporation 91

Kaiser Steel Corporation 112
Kennametal, Inc. 87
Kidde, Walter, & Co., Inc. 10

Landis Machine Co. 8
Lee, K. O., Co. 128
Leeds & Northrup Co. 117
Lurie Brothers & Co., Inc. 106

McKay Machine Co., The 45

Macwhyte Co. 3
Malayan Tin Bureau, The 118
Manross, F. N., & Sons Co., Division of Associated Spring Corporation 83
Marchant, Geo. F., Co. 135
Milwaukee Division of Associated Spring Corporation 83
Modern Engraving & Machine Co. 80, 81
Monarch Machine Tool Co., The 101

National Steel Corporation 27

Oakite Products, Inc. 5
Ohio Division of Associated Spring Corporation 83
Ohio Locomotive Crane Co., The 130

Pawtucket Manufacturing Co. 6
Peterson Steels, Inc. 57
Pittsburgh Plate Glass Co., Brush Div. 128
Pittsburgh Steel Co. 13
Production Steel Co. 46
Prutton, D. H., Machinery Co. 130

Raymond Manufacturing Co., Division of Associated Spring Corporation 83
Reading Crane & Hoist Corp. 129
Reliance Division, Eaton Manufacturing Co. 64
Republic Steel Corporation 78, 94
Rogers, Dayton, Manufacturing Co. 131
Ryerson, Joseph T., & Son, Inc. 36

St. Joseph Structural Steel Co. 132
Sargeant & Wilbur, Inc. 16
Seaboard Coil Spring Division of Associated Spring Corporation 83
Simonds Abrasive Co. 102
Southern Galvanizing Co. 130
Sperry Products, Inc. 105
Standard Oil Co. (Indiana) 15
Standard Pressed Steel Co. 121
Streeter-Amet Co. 130
Summerill Tubing Company Division, Columbia Steel & Shafting Co. 99

Taylor-Winfield Corporation 127
Texas Co., The 28
Thompson Grinder Co., The 85
Timken Roller Bearing Co., The, Steel & Tube Division 54
Tinnerman Products, Inc. 58
Toledo Stamping & Manufacturing Co. 131

United Engineering & Foundry Co. 93
United States Steel Corp., Subsidiaries 23
United States Steel Export Co. 23
United Wire & Supply Corporation 134

Warner & Swasey 22
Waterbury Farrel Foundry & Machine Co. 11
Weirton Steel Co. 27
Westinghouse Electric Corporation, Air Conditioning Division 31
Wheland Co., The 131
Worcester Stamped Metal Co. 126

Youngstown Sheet & Tube Co., The 21

Table of Contents, Page 5

Classified Advertising Pages 132, 133

WORM GEARING — universal in its application — affords advantages for almost every power transmission job. Select worm-gear units to meet your need from the complete Cleveland line. Write now for new 180-page Catalog 400, just off press.

Photo of Michigan Crane & Conveyor parts-loader in the Commonwealth Industries, Inc., plant at Detroit, by courtesy of The Iron Age.

CLEVELAND helps increase furnace output 10%

DRIVING a conveyor that loads small parts into a continuous heat treat furnace 24 hours a day is punishing service. That's why Commonwealth Industries turned to a long-lasting, trouble-free Cleveland. Set up to maintain a steady, sure furnace-feeding pace, Cleveland helped increase furnace output 10% in one year's time. In addition, labor-savings of $17,500 were realized over the same year's period.

Wherever Clevelands serve—and you'll find them in most industries—engineers will tell you that Clevelands do their work under heavy loads, continuously or intermittently, no matter how severe the conditions, with a minimum of attention.

In or near your city, there's a Cleveland engineer ready to serve you. He will be glad to discuss your power transmission problems and suggest proper drives to meet your particular needs. The Cleveland Worm and Gear Company, 3270 East 80th Street, Cleveland 4, Ohio.

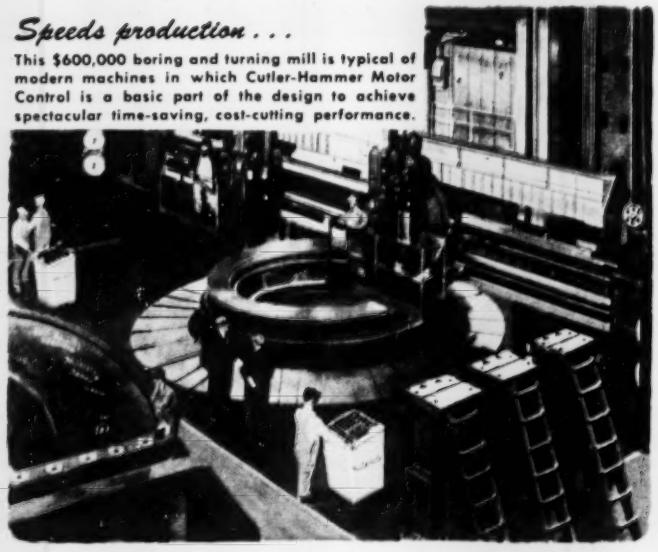
Affiliate: The Farval Corporation, Centralized Systems of Lubrication. In Canada: Peacock Brothers Limited.

CLEVELAND
Worm Gear
Speed Reducers

For today's problems

Speeds production . . .

This $600,000 boring and turning mill is typical of modern machines in which Cutler-Hammer Motor Control is a basic part of the design to achieve spectacular time-saving, cost-cutting performance.



Saves manpower . . .

Fully automatic equipment like Louden Selectomatic Handling Systems release vitally needed manpower for other work. Cycles of all desired operations are performed unattended as pre-set by C-H Control.

Protects equipment . . .

Motors and machines, so costly and often difficult to replace, must be protected from abuse. Users say the very best is dependable Cutler-Hammer overload protection housed in genuine tamper-proof Unitrol.

Time was never more important, adequate help never harder to obtain, damaged equipment never more costly to repair, or replace. These are key problems of industry today . . . and no problems could point more clearly to the fundamental importance of dependable motor control. By its uniformity of response, dependable motor control integrates men, motors, and machines into smoothly operating, time-saving production units. It makes possible dependable automatic equipment that conserves manpower. It protects motors and machines from damaging overloads and the resultant intolerable production interruptions.

Cutler-Hammer general purpose motor control is recommended by a majority of all electric motor manufacturers, is featured as standard equipment by machinery builders, is carried in stock by recognized electrical distributors everywhere.

CUTLER-HAMMER
MOTOR CONTROL
C-H

Many users of electrified industrial equipment have long recognized the importance of *dependable* motor control and have consistently specified Cutler-Hammer Motor Control in their purchase orders. Many more are doing so today. If *your* company has not yet adopted a definite policy on the rigid specification of Cutler-Hammer Motor Control, this is the time to take such action. CUTLER-HAMMER, Inc., 1211 St. Paul Avenue, Milwaukee 1, Wisconsin. *Associate:* Canadian Cutler-Hammer, Ltd., Toronto.